MANAGEMENT OF ECONOMIC DEVELOPMENT: NEW HORIZONS

Management Of Economic Development : New Horizons

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FOREWORD

Rational planning designs and ordered growth in the context of the gulf separating the rich and the poor have been subject of discussion at various fora and in literature on economic development. These have brought out a sombre realization of the difficulties which must be surmounted and the need for a reappraisal of the theories and practices for obtaining the best out of the planning efforts. Most of the scholarly books on planning begin with admonition that the development process is an intricate inter-action of many economic, political and social factors. Nevertheless, available literature leaves much scope for fully comprehending the real inter-actions and giving complete practical insight in the process of economic growth and development.

The training seminar on "Management of Economic Development : New Horizons" was the result of this awareness of the gap between the tools available and their use for economic planning. The practical planners who attended the seminar, often questioned the accepted premises and assumptions which they themselves had formulated, without claiming to have said the last word. In fact, vested interest of an idea is the most powerful inhibiting factor in the process of change and growth. It is all the more so when the

idea is of one's own making. An honest search for new ideas on the part of professionals in planning is a sure and certain step towards the realisation of the goal of economic planning.

The Indian Institute of Public Administration through this book has done commendable work by spotlighting the issues which were elaborated and distilled at the seminar. The substance of the book questions contemporary thought, and cuts deep into the existing systems of planning. The value of the present book has to be weighed with scales of practical relevance on different multi-disciplinary aspects related to development planning.

A meaningful presentation of divergent views expressed by eminent economists, scientists, management experts, practitioners and other professionals must have been a formidable challenge to the Seminar Convener—Professor Ram Prakash. It is an extremely laborious task to prepare gists of twenty six technical presentations in the training seminar and to summarise in a purposeful framework various points made in the deliberations by about sixty practical planners. The task is all the more irksome and arduous when no written papers were given by the speakers. The spirit of enterprise of the Seminar Convener in undertaking this work and the efforts of the Institute to publish this book are truly praiseworthy.

The book should be better received than the Institute might be inclined to expect, as the suggestions based on the past experience contained in it will be useful in the formulation and the implementation of the Seventh Plan. During the five years, beginning with April 1985, the country in the public and private

sectors, plans to invest for development planning Rs. 175 crores per day on an average. The strategy of planning for such a massive investment has to be built around mobilisation and optimum use of resources. For this purpose, as suggested in the Approach Paper, "the management and administrative systems have to be improved to eliminate inefficiency, cynicism and lack of integrity. There is also need for the elimination of numerous points of unnecessary and petty restrictions which have increased partly because of inertia-dominated adherence to past procedures and rules" (pp. 10). This requires substantial structural changes. Towards this end, the various contributions made in the brain-storming session of the Seminar and contained in this book should be of special significance to all those concerned with development planning.

A. M. Khusro

(Prof. A.M. Khusro)
Chairman
National Institute of Public
Finance and Policy
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Planning Commission

PREFACE

The Indian Institute of Public Administration organised a top level training Seminar on "Management of Economic Development : New Horizons" during April 11-14, 1983 in Vigyan Bhawan, New Delhi for Joint Secretaries in Central Ministries, Secretaries/ Commissioners in State Governments and Heads of Technical Divisions. The Department of Personnel, Ministry of Home Affairs, Government of India collaborated in holding the Seminar. The present book is based on the talks delivered and discussions held in different sessions.

About sixty persons attended the Seminar. Eminent practitioners, academicians and experts led the discussions. These, among others, included Professor S. Chakravarty; Dr. Y.K. Alagh; Member, Planning Commission, Prof. M.G.K. Menon; Secretary (Expenditure), Shri Harbans Singh; Secretary, (Planning Commission), Shri K.V. Ramanathan; Chief of Mission, World Bank, New Delhi, Mr. J.D. Roulet; former Deputy Chairman, Planning Commission, Shri P.N. Haksar; and former Member Planning Commission, Shri Tarlok Singh. Shri Pranab Mukherjee, Union Finance Minister inaugurated the Seminar and Prof. A.M. Khusro, Member Planning Commission delivered the valedictory address.

The objectives of the Seminar were : (i) to share knowledge of modern techniques of economic planning and implementation; and (ii) to provide opportunity for exchange of information and experience for improved system of planningcraft. Seventeen papers after intensive literature search and arranged in sequence of the topics to be discussed in different sessions were circulated as Backgrounders.

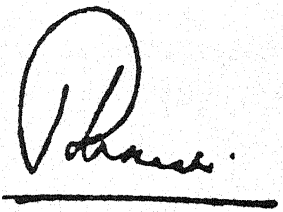
Several significant policy issues were brought out in the Seminar discussions. These related to macro planning; inter-sectoral balances; resource mobilisation; grassroot planning; assessment of planning performance; project planning, control and monitoring systems; computors; technology policy; interface of planners with political executives; and managing differences and building commitment. Causes of shortcomings in current planning system were analysed to improve efficiency of investment. The Seminar discussions looked at planning process from different perspectives.

An effective mechanism of integrated planning at all levels is yet to be developed. Projects have to be meticulously planned and more closely linked with macro planning. Continuous improvements in organisational and implementation procedures are to be carried out for giving proper directions to planning. The professional integrtiy is an essential pre-requisite for the success of the plans.

Systematic organization of various points of view, sometims widely divergent, has involved enormous difficulties in their presentation in the form of a book. The discussion leaders could not provide papers for their talks and deliberations which covered a wide and

varied range of issues. The use of blackboard, to and fro movement of some speakers away from mike in the course of presentation, and distortions in tape recording were major difficulties in reproduction of the talks fully. In such a situation, the gist of the talks only could be prepared. These were thereafter sent to respective speakers for their approval. This process took unduly long time and involved considerable effort on the part of the Seminar Converner to bring out this book.

The book will surely spark off a continuing dialogue on the various issues relating to development planning in the context of the Seventh Five Year Plan. In view of the inter-disciplinary nature of the topics covered, the book will certainly interest all the economists, statisticians, scientists, academicians, civil servants and politicians, involved in development planning.



(P R. DUBHASHI)
Director
Indian Institute of
Public Administration

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SEMINAR COMMENCEMENT AND VALEDICTION

SEMINAR COMMENCEMENT AND VALEDICTION

Shri Pranab Mukherjee, Union Finance Minister in his commencement talk at the Seminar pointed out that the Indian experiment of economic development was rather unique in undertaking planned development under a system of mixed economy. While the private sector was assigned an important role, the public sector was expected to play a pivotal role in putting the country on road to rapid industrialisation. One of the most significant achievements of the planning process has been lifting the country's economy from shackles of prolonged stagnation and launching it on the path of growth. Between 1950-51 and 1978-79 the overall trend in the rate of growth of national income was 3.5% per annum—it was 2.7% in agriculture and 6.1% for industries. One notable point is that agricultural production has been maintained at a level higher than the rate of growth of population. The growth of national income depends on a complex interaction of a large number of variables. Important among these are the rate of saving and investment and the capital-output ratio. Gross domestic savings as proportion of Gross Domestic Product increased from 10.2% to 23.7%. However, the impact of high level of capital formation in the country is not fully

reflected in increased production due to a deterioration in the incremental capital-output ratio. This may be attributed to factors such as changes in the composition of the investment and faster increase in investment cost. While the saving rate is quite high it will be necessary to raise it further in the coming years for improving the requirement of the growth of the complex economy. In the coming years a major objective of the policy will be to increase productivity of the investment. The public sector has started showing notable improvement in profitability, but much remains to be done for substantially increasing profitability of public enterprises through improvement in capacity utilisation. The performance of State Government enterprises also needs to be considerably improved. The process of modernisation is essential not only for industries but also for agriculture. Average yield levels in most regions and farming systems are below what can be attained with known technology. Sustained economic growth is possible only under an atmosphere of fiscal, monetary and price stability. The plan outlay for the Centre, States and the Union Territories provided in 1982-83 budget was higher by 23 per cent., and this was further stepped up to the same extent in the 1983-84 budget. The infrastructure sectors are continuing to record improved performance. Investment priorities have been restructured to allow for a sharp step up in the outlays for energy and infrastructure. In the pursuit of growth, the objective of equity cannot be lost sight of. A conscious effort will have to be made to reduce economic disparities, increase employment and eliminate poverty. The strategy also needs to include

effective policy measures to control growth of population.

The Director of the IIPA, Dr. P.R. Dubhashi in his opening remarks pointed out that Seminar was being held against the backdrop of more than three decades of planning in the country. During this period. the country has gone through as many as five Five Year Plans with an interregnum of three Annual Plans between the Third Plan and the Fourth Plan. The Seminar could provide an opportunity to have a close look at the balance sheet of planning, its successes as well as failures. Planning was introduced in India with a view to providing richer, fuller and better life for the masses of people in the country. The plans sought to harness natural resources with the application of science and technology which together with the mobilisation of manpower resources was expected to create an increasing stream of goods and services, increasing gross national product and higher standard of living for the masses of people. To some extent, these objectives have been realised. The successive Five Year Plans have laid the foundation of the economic infrastructure in the country, modernised agriculture, built up basic industries and diversified the economy. However, the shortcomings in planning are also quite apparent. Though successive Five Year Plans contemplated a growth rate of more than 5 per cent., in actual practice it has hovered around 3 to 3.5 per cent.. With a steady growth of population of more than 3 per cent., the average increase in per capita income has been in the neighbourhood of only 1.5 per cent.. The aim explicitly stated in the First Plan of doubling the per capita

income in 25 years has not been fulfilled. More specifically, almost 50 per cent., of the population has remained below the poverty line. Therefore, it becomes imperative on the part of those engaged in planning to find out the causes of shortcomings and improve the planningcraft which should ensure more effective planning.

Planning is not a matter of mere abstract economic models; it has to enter into the warp and woof of day to day administration. Unfortunately, administration is often buffeted by expediencies which upset the apple cart of smooth and steady progress of planning. Though plans do embody hopes and aspirations of people, they have to be based on facts. Often ambitious planning extends far beyond the resources available; with the result that projects and programmes suffer from lack of resources and do not get completed on time and yield dividends. Often, a smaller plan fully completed on time would yield more dividends than a larger plan which does not get completed on time because of the constraint of resources. The concept of balanced planning in the country has been accepted. This assumes that there will be development in all sectors in a complementary manner. However, inter-sectoral and material balances are often upset by recurring shortages of one input or another. If planning is not to remain a concept, but to become a reality, it has to be ensured that the excesses and shortages do not become a recurring phenomenon. In a large country like India, planning has to be multi-level planning i.e. planning at National, State and local levels. However, a mechanism of truly integrated planning at all levels has

not yet developed. The concept of planning from below attempted during the Second Plan did not succeed. National plans have been disaggregated into State plans and State plans into the district plans and latter into block and the village plans. National schemes are contemplated in terms of features with universal all India application. Often this comes up against the disparities of development in different States and parts of States. Time has, therefore, now come to look at the unique situation in different States and parts of the States and devise programmes which will precisely meet the requirements of these areas. The strategy of agricultural development appropriate for Punjab which has witnessed the 'green revolution' may not be suitable in an under-developed State like Assam or parts of Madhya Pradesh, where agricultural development is still in a rudimentary stage. More attention needs to be paid to spatial planning. Though in 1969 the Planning Commission issued detailed guidelines on district planning, the concept of district planning has not taken a practical shape in most of the districts. The very sectoral and vertical approach of administration at National and State levels comes in the way of horizontal planning in every district which is specific to its own requirements.

The Director of the IIPA also pointed out that even though it had been well accepted for quite some time that for success of planning there must be technically feasible and economically viable projects, it was still found that sound projects were not always available, and the projects implemented suffered from schedule slippages and cost over-runs.

Project planning and its linkages with macro planning needs closer attention. Plan programmes often fail to reach the objectives and do not have the necessary impact because they are seen in isolation and necessary linkages are not provided. Often there are leakages and benefits do not reach whom they are intended. Field agencies must concentrate more on reaching the real objective of the programme than to get lost into the targets of input and output. There has to be a continuous monitoring of plan projects and programmes.

Organisations and policies have to be under continuous examination to see that plans go in the right direction. The tempo of investment has been rising in the successive Five Year Plans, but at the same time there is a disturbing phenomenon of rising capital-output ratio, with the result that efficiency of investment is falling. Smaller investment with greater efficiency will yield larger dividends than larger investment with smaller efficiency. Concentrated efforts have to be made for improving the efficiency of investment. The procedures of planning also need to be examined. Over the last three decades of planning, the process and the procedures have not changed. There is need for change. A new impetus to planning needs to be imparted. Improvements in the light of experiences must be introduced. Comprehensive planning in USSR, indicative planning in France, and consensus planning based on sophisticated forecasting as in Japan have lot to teach us. Lessons must be drawn from abroad and adapted in our own system of planning.

Explaining the highlights of the Training Seminar, Prof. Ram Prakash, Seminar Convener, pointed out that economic development is not solely a function of inputs of measurable quantities but is tied up with management and entrepreneurial qualities of people. Failure to recognise is seen from the fact that scarcely any correspondence is found between economists' paper and the field results. The argument, it was a splendid plan but just did not get implemented, has worn out thin. There is a growing realisation that to manage the economy of a country of this size and complexity there is need to have proper expertise and understanding of problems and integration of various activities viz. political, industrial, entrepreneurial, scientific, organizational, all into one. An attempt is being made through this Seminar to understand the new approaches and concepts relating to all the important aspects of macro planning. As such, the Seminar faculty consists of economists, scientists, technocrats, practitioners and management analysts, and covers discussion on topics which are economic as well as non-economic.

According to the Seminar Convener, the economists were first guided by Keynesian thought. But when deficit spending to pump up a slack economy ballooned inflation it was realised that it was like digging holes in sand and the economist became 'Supply Sider'. Reliance was placed on the famous curve of Arthur Laffer which was designed to show that cutting tax rates could stimulate the economy so much that total tax-take would rise and the budget deficit would fall. When this did not work, the economist became monetorist. Nobel Laureate Milton

Friedman holds that slow and steady money growth is the key to economic health. Economists became his followers and believed that money supply could be squeezed without harming economy through manipulation of rate of interest. When this too did not work, economist realised that real life is not that simple. There are some truths in many theories and pragmatic approach is for a balanced "eclectic package". It is a triumph of pragmatism over theory. A home spun theory of economic development is needed.

Despite having the third largest technical manpower, India has not been able to get the latest technology in terms of product composition and engineering designs. In an attempt to establish a parity with western technology the country would be trying to hit a moving target. Japan has prospered not by offering the flag of new technology, but by seeking out, buying in and improving on technology developed abroad. Explaining the compelling reason to keep a session relating to computers, Prof. Ram Prakash explained that there was a growing realisation that managers who did not have ability to use a terminal within 5 to 7 years might become organizationally dysfunctional. The Seminar Convener concluded by citing Rig Veda Hymn: "Let noble thoughts come to us from every side."

Dr. B. Venkatappiah, Chairman, Inaugural Session pointed out that unless the State Governments were convinced of the wisdom of including various programmes and projects in the plans, the prospect of their implementation was dim. At the district and block level planning, the major

problems are to supplement resources available through normal channels of planning and integrating the various activities for the benefit of the common man. The Integrated Rural Development Programme was one such attempt in that direction. The development banking efforts can be used for supplementing the available resources for district and block levels. While making available the banking resources it is to be ensured that these are distributed in a meaningful way and not in the "banking way". Prices of various amenities have to be fixed keeping in view the paying capacity of the people. At these prices some of the investment proposals may not be bankable in the strict sense. He stressed the need to combine various development efforts for constructive purpose.

While delivering the valedictory talk Prof. A.M. Khusro, Member, Planning Commission, pointed out that it was a satisfying feature of the Seminar that various issues pertaining to planning were discussed in a pragmatic manner keeping in view both the practical and theoretical aspects. Many farsighted and positive ideas emerging from the discussion could be taken for implementation. During the first quarter century of planning, the rate of growth in India had remained around 3.5 per cent., against the targeted rate of about 5 per cent.. This has got uplifted somewhat in recent years; but structural changes both in the economic and political approaches would be required to maintain and further step up the current rate of growth. Location specific and regional planning constitutes one such approach towards the desired growth path. For this purpose,

the local and regional institutions should be strengthened. Professor Khusro also mentioned that the trickle-down theory of economic development which stresses on growth alone ignoring the redistribution effects was not applicable to India in the past, but might well become effective in the future. The impact of development programmes in terms of improvement in the quality of life of the people would further enhance the redistributive effects. While assessing their impact, the shifts in the consumption patterns and steadily increasing proportion of consumption of non-food items should also be taken into account. This will help in a realistic depiction of the people below the poverty line at different points of time. According to Prof. Khusro, the public sector has so far performed a promotional role and has been an effective supplier of the basic infrastructures. It should now concentrate on improving its efficiency and on utilising its idle capacity more fully and effectively.

In the valedictory session, Dr. P.R. Dubhashi pointed out that the Seminar had provided a forum for contributing ideas on planning from different viewpoints and perspectives of professionals—economists, statisticians, scientists, administrators and politicians. He referred to some of the significant points made in the Seminar. For the success of planning, basic integrity is more important than the concepts. The Seminar was designed to perceive planning from various perspectives. The economist's concept of planning was in terms of a consistent model of ends and means, of aims and instruments. The scientist looked at planning in terms of building symbiotic relationship between science, technology

and development. The administrator's and manager's concept of planning was that of assemblage of viable programmes and projects capable of being implemented successfully. The statistician's concept of planning was in terms of a satisfactory information system at all stages of planning. But transcending all these concepts of planning was the basic concept that concerned the politician, the statesman and the people at large namely, the plan as an instrument of a historical process of political, economic and social transformation of a nation in an integrated framework of ideological, technological and institutional change. If planning has to have any meaning and validity, then each of the partners, the politician, the economist, the technologist, the administrator and the statistician must have basic integrity in planning. Planning is a matter of both political choice and economic arithmetic, but before economic arithmetic comes the political choice. The choice between different goals of planning is essentially a political choice. Selection between faster or slower growth rate, between rate of growth and pattern of distribution, rural and urban growth, all have elements of political choice. Before planning is undertaken, the politician may decide between one pattern of planning as against another but once the choice has been made, the politician must have the integrity to clearly take responsibility for his choice and must have the courage to go to the people and tell them what is possible and what is not possible and what the Plan intends to do or does not intend to do. Making certain political choice for those who have to do the exercises of planning but saying something quite

different to the people would cast doubt on the credibility of the plan itself. The integrity of economists again lies in clearly telling the political authority the logic of a consistent economic model and its imperatives in terms of limitation of achievable goals in relation to resources or in terms of instruments of planning. Similar is the integrity of the administrator and the manager. While the administrator is bound to carry out as best as possible programmes and projects in pursuit of political choice of planning, he also likes the economist to fearlessly state what can be implemented and what cannot be. Planning which is incapable of being implemented, can only prove counter-productive in the long run. Finally, it is the statistician's onus to provide data base for planning as well as information system for monitoring. He must see that under no circumstances are data distorted or statistics manipulated because in that case statistics may be worse than the lies and nobody would believe in them and the plans based on them. Once this basic integrity is ensured on all sides, attention could be concentrated on making planning more effective.

According to the Director of the IIPA, apart from integrity, the Seminar deliberations brought out the roles that the eonomists, administrators and the statisticians should play for effective planning. In constructing the model, the economist is faced with multiple goals of planning like higher rate of growth, equitable distribution both class-wise and region-wise and, maintenance of the equilibrium of the economic system. For fulfilling these goals the economist must devise instruments which are

adequate, robust and efficient. But in the present economic situation in India the economist is faced with increasing difficulties in devising adequate instruments of planning. Instruments like taxation, exchange manipulation, price and wage regulations have become blunt while on the other hand, the resource constraint is getting more and more acute despite the increase in the rate of savings of nearly 20 per cent. of GNP. Faced with these restrictions on the resources and instruments of planning, the economist must lay greater emphasis on the efficiency of investment. In recent years, the capital-output ratio is getting more and more adverse. Causes for this should be identified and steps taken for increasing the efficiency of investment. In agriculture, with the zero per cent. growth in land availability, the prospect of increasing production would be possible only if there is a greater investment in irrigation and other agricultural inputs. Agriculture, therefore, has become a demanding sector. It demands increasing investments but these investments do not yield adequate returns because they are not effective. For example, because of the defective water conveyance system, tailenders do not get water and about 25 per cent. of the area under sugarcane is estimated to be water-logged. What is important is, therefore, not how much is invested, but how well invested. One of the reasons for less adequate return from investment is the failure in the maintenance of assets. Replacement and maintenance have been neglected and, therefore, it has become necessary to prepare a "maintenance plan" as complementary to the "development plan". Also, there has been in recent years heavy expenditure on non-development items

which needs to be curbed. Planning is faced with another difficulty namely, demand for more welfare programmes. Thirty years ago, Nehru said that the present generation was sentenced to hard labour. People, therefore, put up with capital investment which did not yield immediate return, but now their purchasing power has eroded and they cannot afford to buy essential consumer goods though at the same time their expectations have increased. Hence, States are going in for welfare projects like employment guarantee schemes, old age pension, subsidised distribution of rice, mid-day school meal and so on. These demands are bound to increase and are bound to cut into investments in heavy investment sectors like power or irrigation. It is necessary to find out how these welfare programmes can also contribute to the creation of material assets as well as productive efficiency of the people and thereby contribute to higher production.

Administrator has a crucial role to play in increasing efficiency of investment. He has to see that programmes and projects are carefully identified, scientifically formulated, resolutely implemented, closely supervised and monitored and properly evaluated. The statistician has to come to help by providing adequate data base for plan formulation and for developing a management information and monitoring system which is both simple and comprehensive and workable at various levels and in different departments.

Concluding his observation, the Director of the IIPA pointed out that the development was not just a question of investment but also of technology.

Significant development in technology is possible only on the basis of scientific advances. At the same time, breakthrough in scientific laboratories is capable of application in the field only on the basis of a range of intermediate steps which are required for the transfer of technology from the laboratory to the field. Adequate resources have, therefore, to be provided for providing innovative chain. Building up symbiotic relationship between science, technology and development should be accepted as a long-term national responsibility as in Japan.

The Director also felt that the topics taken up in the Seminar required extensive deliberations. The Indian Institute of Public Administration will continue to explore possibilities of organising special seminar for indepth discussion on issues of topical interest. The Institute is committed to better working through higher standards of public administration.

Giving an overview on the Seminar, Prof. Ram Prakash, Seminar Convener pointed out that the outcome of an economic effort is the result of organizational structures, management systems and the people. The thrust of the Seminar was on management systems. The four days spent by the participants in the company of eminent economists, scientists, technocrats, practitioners and management experts was a period of intensive learning and reflection. According to him, in the course of indepth discussion one often found oneself in waist deep muddy analysis struggling to extract lessons which might differ from person to person. On status of the Indian economy, consensus was that it is certainly

a growing economy but productivity is below potential. The incremental capital-output ratio is increasing. Even if, in absolute terms, a substantial number has been added to the class of the non-poor over the last few years, the terrible problem of the poor below poverty line still remains terrrible. Irony is while India holds some of the greatest riches on earth it is one of the world's poorest countries. A satisfactory solution to the problem of inefficiency, waste and sluggish technological progress has got to be found. The very realisation of these facts by the participants was in itself a positive achievement of this Seminar. The validity of the system of economic planning was questioned on many counts and a large number of good suggestions were made in the Brain-storming Session to develop alternative policies with wide appeal. The betterment of planningcraft is a continuous process. According to him, the Seminar provided: (i) a genuine forum to express dissatisfaction; (ii) an opportunity for soul searching; and (iii) venue to establish and strengthen contacts among co-professionals. The Seminar Convener concluded by expressing the shared determination of the participants:

Good better best;
Let us not rest;
Till our good is better,
And our better becomes best.

Prof. M.V. Mathur, Vice-President of the IIPA, proposed a vote of thanks to Prof. A.M. Khusro for his valuable participation and thoughtful remarks. He also thanked the seminarists for their

sustained interest and constructive contributions. According to Prof. Mathur, the process of planning is bound to suffer from some pitfalls in view of mixed economy, multi-party political structure and distributed Centre-State responsibilities. The practical wisdom lies in identifying areas lagging behind and devising improvements in the planning system after taking into account various socio-economic compulsions. He hoped that the IIPA would provide more opportunities for such deliberations for improving the planningcraft.

RAM PRAKASH
Seminar Convener

1. MACRO PLANNING TECHNIQUES AND POLICIES

1.1 Theory and Techniques of Macro Plan Design

1.2 Inter-sectoral Balances and Policy Questions

1.1 Theory and Techniques of Macro Plan Design

Discussion Leader
Prof. Sukhmoy Chakravarty
Delhi School of Economics
Chairman
Economic Advisory Council to Prime Minister

Professor Chakravarty emphasised that issues concerning macro and micro planning cannot be viewed in watertight compartments. A macro model is the aggregation of micro results. To achieve certain growth rates we might look either from the point of view of macro situation or from the micro angle. The macro growth rate could be weighted in favour of micro targets or *vice versa*. The two are not mutually exclusive in the context of Indian planning. We could achieve a higher growth rate with change in production functions, but these changes need not be consistent with micro objectives. The distinction between the macro and micro from the policy point of view depended on the economic environment and, specific problems under consideration.

In macro plan design one has to keep in view three important factors—(i) structural features, (ii) number of policy instruments *vis-a-vis* number of targets, and (iii) assignment of instruments to targets. From structure point of view, the major

considerations are whether one is dealing with open or closed economy relative price stability; and relation between money flows and real flows. Referring to Tinbergan approach, Prof. Chakravarty mentioned that basic issue of macro plan design was how to maintain a balance between the number of policy instruments and targets to avoid inconsistencies. The number of instruments should normally be equal to that of targets in an economy. If the number of instruments were less than those of targets, then, in general, the viability of macro plan could be questioned. At conceptual level, the basic problem with Indian economy had been that there were multiplicity of targets and a limited number of instruments. A pragmatic approach was needed in linking the instrument to target, so that proper balance was worked out between short and long-term objectives of growth and distribution. In Indian planning, attempt had been made to achieve a mix of the two. The instruments of public investment and market borrowing had been most widely used and those of tax rates were used to the limited extent. The instruments like wage rates, exchange rates and money supply had not been fully utilised to resolve problems of the poverty of the large mass of population.

Discussion on the subject showed that concerted attention needed to be given by economic planners for establishing a proper balance between instruments of policy and targets on objectives. Above all, success of plan efforts depended on able administration. Allocation of funds on the basis of

capital-output ratios was not sufficient for economic success of our plans. Prof. Chakravarty agreed that economists and administrators at policy and field levels must work together to ensure consistency and feasibility of planning.

1.2 Inter-sectoral Balances and Policy Questions

Discussion Leader
Prof. Y.K. Alagh
Chairman
Agricultural Prices Commission

Explaining the policy logic behind the five year plans, Prof. Alagh mentioned that according to traditional economics, to take an example, consumption is a variable, dependent on population, per capita income and income distribution. Tinbergan gave a different and powerful, approach namely, that of the modern theory of economic policy. This visualised a reverse process. In the example, consumption can be postulated as a target and other variables, for example, per capita income and its distribution, as policy instruments. This gave a powerful tool for analysis. This approach called for first, quantifying the policies earlier stated in general terms and second, making the policies consistent with the targets. It is an universal phenomenon that social and political forces press hard for inclusion of a number of objectives. Unless the required number of policy instruments are provided, the approach is likely to be unfeasible. The consistency and quantification of various targets and policy instruments are the heart of model building. With this approach, the five year

plans can also be seen basically as policy models. In fact, economists like S. Chakravarty and J. Sengupta had reformulated the analytical variants of earlier plan models in this "policy theoretic framework".

At a formal level, according to Prof. Alagh, there are five balancing systems in the five year plans. First is the macro balance. The target of income growth is related to total investment required through a relationship of incremental investment and incremental output. From the total investment the financial resources available from the rest of the world are deducted and the balance is met through domestic savings. Second is demand modelling. Some of the best technical work in the world in this area has been done in India. Over the last 20 years data have been collected from nearly 100 thousand households indicating how they have been consuming various commodities. The consumption demand systems were built up separately for the rich and the poor, rural and urban and in their different combinations. We have annual data on these aspects through the National Sample Survey. The information processed indicated how the household consumption reacted to different price levels and income constraints for ten or twelve major groups of commodities. Details of commodity demand changing with reference to income levels have been worked out for about sixty commodities additionally. With the help of this methodology one can assess how the shifts take place in the consumption pattern of the urban rich and the urban poor, and the rural rich and the rural poor with the changes in income. Given the

income targets of the Indian economy after allowing for foreign exchange and domestic savings balancing items, we could experiment with the possibilities of requirements of different commodities with the change in redistribution of income towards the end of one or two plans. The third system is derived from the first two and relates to material balances. It is based on the statistical and technological information given by different subject divisions of Planning Commission and Central Ministries. Input-output is the related fourth balancing system. This system also determines the requirement of inputs. Projections of exports are handled separately outside the system through exercises by Working Group appointed for the purpose. In these exercises, among others, both the Reserve Bank and Commerce Ministry are associated. Given the income target, consumption pattern, redistribution structure, input-output relations based on technological and statistical information, the Sixth Plan developed the fifth balancing system for determining investment requirement for different sectors.

To assess the robustness of the system and to determine the directional thrust the balancing systems were sensitivised for different policy instruments. Out of various alternative scenarios, four major issues emerge regarding the agricultural economy: (i) food has an over-riding importance in ensuring non-inflationary growth and redistribution objectives; (ii) dim prospects for achieving cropped area growth of 0.3 per cent. per annum; (iii) the operational efficiency of our farmers is much lower than the outcomes achieved under experimental

conditions; and (iv) as a consequence of the three, agriculture is a sector which requires considerable priority for investment. In addition, there is the constraint on investible resources due to the high priority need of augmenting energy resources and their efficient use. The Planning Commission's work on agricultural sub-modelling and energy policies are related with these questions.

In the course of discussion, it was pointed out that maintenance of assets is becoming another constraint on investible resources. The State Governments at the time of submission of their Plans show lesser non-plan outlays to produce a bigger and unfeasible plan. A suggestion was made that a study might be made about relative productivity of maintenance and development expenditures. On the question of updating material balances, Prof. Alagh was of the opinion that it was not necessary to revise these every year unless some drastic development took place. Mid-term plan reviews after 2 and 2½ years are in fact exercises in that direction.

In further discussions on the employment and poverty removal oriented objectives of the Plan, Prof. Alagh pointed out that the purpose of the agricultural and employment "sub-models" of the five year plans was to demonstrate the need of meeting production targets, redistribution goals like land reforms and of important input targets like irrigation in meeting these goals. Such work provides the necessary data-based focus on the links of the investment plan with important organization issues like rural development planning organizations and policies.

2. SYSTEMS VIEW AND TECHNOLOGY POLICY

2.1 Systems View of Management of Economic Development

Discussion Leader
Dr. L.K. Wadhwa
Director Institute for Systems Studies and Analysis
Ministry of Defence

Dr. L.K. Wadhwa initiated the discussion and mentioned that systems analysis may be described as a systematic approach to helping a decision-maker choose a course of action by investigating his full problem, searching out objectives and alternatives, and comparing them in the light of their consequences, using an appropriate framework in so far as possible analytic—to bring expert judgment and intuition to bear upon the problem.

To facilitate decision making, a systems analyst builds models which are invariably based on certain implicit/explicit assumptions. The models help to identify the parameters that have an important bearing on the problem and in respect of which information/data need to be collected; and, also those that have a critical bearing on all its facets. A number of tools and techniques are available for use in the quantitative analysis of the problem. 'Cost-Effectiveness'/'Cost-Benefit' analysis is one

of the most commonly used techniques, particularly for decision-making in the planning for economic development. The 'costs' and 'benefits' of any effort are defined in quantitative terms. The required resources are compared with those that may be available. To establish a balance between the ends and means, a large number of iterative exercises are invariably carried out, necessitating, more often than not, suitable modifications of the aims and objectives. The number of iterations depends upon the complexity of the problem. The practical difficulties involved in the quantification and measurements of certain parameters were highlighted and discussed at great length.

More often than not, one of the most important facets a systems analyst is required to study and investigate, is the 'future.' To an analyst, future is not something that is unique, inevitable or pre-ordained and something that is to be passively accepted and endured with resignation but, it is something that has a variety of contours and contents and can be designed, to a large extent, by conscious human efforts and will. A variety of futures are possible and the occurrence of one or the other can be largely influenced by conscious human choice and preference; and, the resources and efforts harnessed in its realisation.

It is a common experience in a physical universe that the control and regulation of a massive body moving at high speed requires considerable effort and time. Heavier the body and faster its speed, the larger the effort and longer the time that will be

needed for it to be able to respond to any corrective measures introduced to regulate its motion. The galloping rate of change of modern science and technology has made it imperative to anticipate the future as the impact of any change introduced in the present can be discernible only in the future. Therefore, in order to be able to realise a certain preferred future, the required action has to be taken at a sufficiently early time. Hence, the imperative need for meeting future uncertainties.

Some of the well known and reasonably well established techniques for prognosticating the future are the Dalphi, Trend Extrapolation, Mathematical Models, Simulation, Scenarios, and Cross Impact Analysis etc.

In the course of the discussions, it was emphasised that application of management system to economic development will call for clear and complete answers to the following five questions :

(a) What is needed to be done ?
(b) Who is required to do it ?
(c) When is it required to be done ?
(d) How is it to be done ?
(e) What will be the costs involved in doing what is needed to be done ?

It also emerged that planning, execution, monitoring, evaluation and realisation of the objectives become easier and more effective when assigned responsibility is commensurate with delegated authority and provision of adequate measures is made for accountability.

2.2 Technology Policy

Discussion Leader
Prof. M.G.K. Menon
Member
Planning Commission

The technology policy must be viewed, according to Prof. M.G.K. Menon, Member, Planning Commission, in the background of six basic elements of technological progress. *Firstly*, although a century ago development of science took place separately and independent of technology, in modern age these two bear a symbiotic relationship. Technology is not self-contained. A very large part of present production process in every field involves a great deal of science. All major technological developments are based on scientific methods. Electromagnetism is the heart of electrical engineering and energy industry. Nuclear technology is based on electronics arising out of modern understanding of solid state physics. *Secondly*, technology is not factory or hardware oriented only. It should be considered in wider sense as it now includes software, biotechnology encompassing innovation change etc., *Thirdly*, the industrial revolution had

two main features of mass production and standardisation, but the modern computers with greatly enhanced capabilities of storage, handling and application of data have brought about information revolution. *Fourthly*, in innovation change each successive step from laboratory innovation onward to commercial production is more expensive. The research and development at laboratory stage which is the first step in innovation, is estimated to involve only about 10 per cent. of the total expenditure on product development. The remaining 90 per cent. of the expenditure is required in the down innovation change steps. In Indian context, the biggest problem save defence research, is that adequate funds are not available for successive steps of converting laboratory know-how into industry know-how. *Fifthly*, poor coordination between researchers and end users did not permit utilisation of results of research and development efforts for commercial production. The design and consulting engineers' efforts must be linked to the research and development activities for innovation change. *Lastly*, technology is a part of total system. For instance, in agriculture, seed development efforts cannot give desired results unless adequate provisions are made for fertilisers, pesticides, irrigation, soil testing and development, and training of extension workers. Upto seventies, technology development was based on the assumption that energy was abundant and all outputs could be stepped up by mobilising more capital and labour. These assumptions are no longer true. Natural resources constraints and employment considerations are now important in choice and development of technology. There are stringent

regulations particularly for chemical technology on what one could discharge into the environment like of which did not exist in the fifties and sixties.

Regarding technology policy in India of January 1983, Prof. Menon observed that India had been a part of open world system and had no hesitation in accepting technology from other countries through trade, aid and other arrangements. Over 7,000 technical collaboration agreements of wide spectrum have been entered with different countries like U.S., U.K., France, Italy, Japan, USSR, East European. Currently, about 500 to 600 are being concluded every year. As such, it is not correct to allege that India is restrictive in accepting the technology from abroad. Secondly, India never had autarchic attitude towards technology i.e. we will ourself develop. We believed in judicious mix of indigenous and imported technologies.

According to Prof. Menon, adoption, acquisition and development of technology are time and money consuming activities. These must be planned properly. Every technology must be broken down into its components so that decision on "made" or "buy" could be taken in long-term national perspective. In selection of technology we so far had piecemeal approach, judged from the point of view of individual firms. No one can give readymade technology suitable to our socio-economic conditions. We must develop our own system of adaptation and absorption. This is possible if we have adequate scientific capability in our country. The scientific education in our country should be improved and technology development must be relevant

to the needs of our country. Adequate provision must be made for research and development. The current level of expenditure of about Rs. 200 crores in research and development does not significantly contribute to design development and process research. Bulk of it is spent on quality control, market research and product differentiation. A central coordination set-up modelled on the basis of Japan's Ministry of Industry and Technology Imports (MITI) could be very useful in monitoring technology imports and their absorption. In early 70s, Japanese decided to be at top in electronics and automobiles. Through an elaborate planning process, government and private industries assigned responsibilities to each for specialization in their allocated areas. On the same lines, we can identify certain sectors for technological development, determine goals and the total system could be made to work to achieve the mission. Prof. Menon was of the opinion that import of technology through some Technology Import Corporation will have administrative problems.

Problems of inter-firm horizontal transfer or diffusion of technology due to restrictive clauses in collaboration agreements with foreign firms and transfer of obsolete or outdated technology under the garb of appropriate or intermediate technology were pointed out. Some of the other contributions made on the subject in the course of seminar proceedings related to exchange of experience in transfer of technology. Nine to twelve international monopoly firms forming a cartel have established binding contractual ties among themselves. These

agreements stipulate, among others, terms of sale, mechanism of meeting in advance of tenders, guidelines for price fixing, procedures for allocating orders and payment of compensation by successful bidders. Realities of business are "give and take". If we want an exchange of technology we can do it only if we are strong ourselves. Even with the third largest technical manpower in the world we have not been able to modernise product composition and formulation, design and redesigns. If we start assembly line units for foreign components, we are only having "screw driver" factories. This is not transfer of technology. How many of these collaborations which are in fact marriages of convenience, will ultimately end in divorce, is yet to be seen. In this context, self-reliance has a purpose. But there is a limit up to which we can go. It is an uphill race. In an attempt to establish parity we will be trying to hit a moving target. Japan has prospered not by flying the flag but by seeking out, buying in and improving on technology developed abroad. For technological breakthrough we have two choices: (i) to reinvest and by the time we develop our product there is danger of its being obsolete; or (ii) to make a deal with the one who makes the best products in the world. To take full advantage of (ii) we must have a good base of our blue sky experimenting basic research. Concerted efforts are called for to strengthen our teaching of science research, and development.

3. PLANNING PROCESS

3.1 Inter-face of Planners with Political Executives in Economic Planning

3.2 Resource Mobilisation at Centre and States

3.3 Integrated Planning—Grassroot and Upward

3.1 Inter-face of Planners with Political Executives in Economic Planning

Discussion Leader
Shri P.N. Haksar
Former Deputy Chairman
Planning Commission

Shri P.N. Haksar mentioned that he was not an economist, not a planner, whatever planning in India might mean, and not even a politician. He was a lawyer, but by a combination of chance and accident, he got enlisted as a member of the Indian bureaucracy. And since he had spent fairly a large segment of his life as a member of the bureaucracy, he regarded himself as a bureaucrat, or some sort of a management specialist.

With the sort of background of experience, he has become intensely conscious of interconnection between things. Even if we disconnect things for the purpose of investigation and analysis, we must not forget to reconnect them and then see how any system works, be it a simple electrical system or a mechanical system or the more complicated social, political, economic, cultural and value systems.

According to him, it is not necessary to elaborate further on the theme of 'interconnection of things,' more specially to an audience of the type participating in the Seminar. Perhaps, the complexity involved could be underlined by taking the example of management of a manufacturing enterprise, large or small. Such a management involves understanding the interconnections between capital and the output within a process which involves interaction between machinery, materials, human skills, human motivations, the market and, of course, the consumer. The market might be the national market or the international market, or a combination of both. If the single link is missed, failure would be guaranteed. It, of course, assumes that an Indian entrepreneur or capitalist is sensitive to something more than the simple calculation of personal enrichment and looking upon profit as the end-product of working machinery, men, materials with efficiency and integrity and keeping consumer satisfaction as his reward. It should not be difficult to see that this sort of management of a manufacturing enterprise in an ancient semi-feudal society, is not automatically achieved and that value system and culture appropriate to a trader is totally inappropriate for a person who likes to call himself an industrialist in our country.

He emphasised the word 'in our country' because the process of modernisation through modern industry and modern agriculture has both universality and specificity. This would be evident to any economic historian who has familiarised himself with what took place when the mediaeval

England, France, Germany and Japan took to the path of industrial revolution. And, in the process, each produced a definitive pattern based on cultural and historical specificity of the country concerned.

Despite years of planning in our country, he discovered to his utter horror that the most vital interconnections or linkages were missing. Economists have tended to think that planning is some sort of exercise in which they can display their learning and technical virtuosity. The politicians, barring a few honourable exceptions, think that planning and Planning Commission are a sort of homage to their appearing to be enlightened. As an observer of the drama of planning in India, he said that he had been witnessing two recurring scenes : (i) where economists, out of cowardice or mental confusion, totally ignore the vital parameters, e.g. politics, value systems, social structure, agrarian structures, cultural heritage and institutional mechanisms; and (ii) where politicians think that good politics consists of "spending money" unrelated to the creation of assets and in total disregard to the most elementary and primitive necessity of output being more than the input. The result has been that operationally and despite the technical virtuosity of the planners, the plan in India degenerates into allocation of money which is then spent on purposes which the politicians regard as vote-catching for the time being. Words like 'productivity,' 'efficiency,' 'asset creation' are all bandied about in the same manner as we glibly talk of 'secularism,' 'socialism,' 'equality,' 'casteless society,' 'truth' and 'non-violence' etc. etc., While in

Japan, Statistical Quality Assurance, Operations Research, Systems Analysis are integral and essential part of consciousness of management, workers and production engineers, in our country they are regarded as some exotic piece of thoughts of mathematicians and statisticians.

According to Shri Haksar, we are all familiar with the results of the failure to see that a planned development of our country, divorced from the concommitant variables of politics, economics, social, educational, health, cultural and other linkages, produce dissonances, tensions, regional and intra-regional imbalances and consequently the structural instability of our political system. There has been a constant shortfall between the growth targets and the targets actually achieved; a constant increase in the capital-output ratio reflecting wastages, corruption and inefficiency. While the planning is conducted under the banner of 'growth with stability,' and 'growth with social justice', we have neither achieved stability nor social justice.

He desired to emphasise, for the benefit of those economists who measure things with such breath-taking vigour, that in human affairs, it is not persuasiveness of a number representing GNP or its distribution which counts. What counts is the continuing and continuous tension between achievement and aspirations. People in millions are agitated and excited by the feeling of injustice, the feeling of deprivation, the feeling of inequality in our society where life-styles of 'haves' and 'have nots' are so outrageously askew.

Our politicians stimulate, in pursuit of power, higher and higher aspirations. He did not desire to suggest that that was wrong in a country like India where millions suffer deprivation and even destitution. But then, politicians who fail to manage the aspirations aroused, must know that they are playing a short-term game and that sooner or later, a credibility gap develops which is destructive of the process of national integration and social and political stability.

Japan, which consciously set itself the task of modernising the country after the Meiji Restoration in 1868 recognized the absolutely critical importance of liquidation of illiteracy in the country. This they did in the course of ten years. They recognized the necessity of agriculture producing the necessary surplus to sustain industrial development. Sixty to seventy per cent. of capital invested in the industrialization process in Japan was drawn from agriculture by the feudal lords of Japan. In our country, the total number of illiterates continue to grow. In our country, even the rich farmers do not contribute anything by way of direct taxes to the defence of the country, let alone to its modernisation and industrialisation. All these years, our commercial irrigation has been producing losses. Our power generation produces losses, our State transportation system produces losses and so on.

According to Shri Haksar, our economists think that their task is done when they have written out the prescription. However, as per his contention, their prescriptions are based on wrong diagnosis,

with the result that the health of the country deteriorates. The central point of the diagnostic error has been the easy assumption that development is merely 'economic' development. Development has never been conceived and, where conceived, our economists have never insisted upon a policy frame for changing our historically specific Indian society with its institutional, religious and cultural components. In brief, they have never articulated systematically that the economic development has its necessary counterpart in social and cultural patterns and value systems. In such a situation, there is always a hunt for the scapegoat and the most easily available target is the bureaucrat. Bureaucrats certainly have their responsibilities. But what are those responsibilities ? *Firstly*, they must carry out Government's policies faithfully with integrity and commitment; *secondly*, they must inspire confidence among the people that between different castes and classes, a bureaucrat will be guided strictly by the merits of the case and make decisions within the framework of policies announced by the Government. There is, of course, the implicit assumption that Governments do formulate clearly-defined policies and sustain it over fairly long period of time.

It is by now well known that in the recent years, and more specially, during and after the emergency, bureaucracy as a system has been totally eroded and corroded by the most arbitrary exercise of political power leading to the near collapse of bureaucracy as a functioning system within the framework of objectively operated rules and regula-

tions. The result is that bureaucracy, as an instrument, has been blunted. We have not created a political instrumentality reaching out to the masses of our people, and securing for them their rights. It is, therefore, not surprising that allocation of resources for uplifting the small and marginal farmers, the rural poor, the Harijans, the unemployed, fail to produce the desired results. All that we have is a sort of political 'tokenism.'

Shri Haksar continued that in whatever he had said so far, he should not be misunderstood. It was no part of his intention to establish the proposition that all our ills could be traced to that abstraction called 'political will.' The 'political will,' in its turn, is equally a reflection of the general will. Political will also interacts with whatever economists, scientists and technologists say. And when our economists argue that they are not concerned with politics or take politics for granted, they are equal partners in producing or perpetuating our political, social and economic malaise. According to Shri Haksar, he was forced to say that because he had come across in our country a fairly large number of our economists who say that politics is not their concern. To say the least, such an attitude is not only absurd, but is singularly devoid of public morality. A similar sort of attitude prevails even among our scientists. They simply fail to articulate their well considered opinions as scientists and technologists on a large variety of matters concerning science organisation in our country, the area of thrust, the translation of the concept of self-reliance in scientific and technological terms, the question of peer

assessment in India of scientific work, the question of goal-oriented research etc.. In this view of the matter, our economists need to educate themselves about the political processes and politics. Our scientists need to become equally sensitive to politics and economics. Unless this is done, we shall continue to live in the light of short-term politics which, in the long term, produces guaranteed national failures and consequent crises of one sort or another.

Modernisation of ancient Indian society without social reforms, educational reforms and without passionately and consistently promoting secularisation process and increasing the ambit of scientific temper, according to Shri Haksar, may produce quantitative changes in economics and other indicators, but would not create an India holding its head high among the nations in the world and truly self-reliant subject of history rather than an object of other people's machinations.

In reply to questions, Shri Haksar clarified that it was not a matter of removing suspicion between the politicians and the civil servants but of dealing with the complex system of dissonances where the value system of family, caste and creed of ancient society comes in conflict with that of modern times and a change has to take place. It is not true that the required money input for research and development is lacking. Institutes like the Council of Scientific and Industrial Research (CSIR) have been set up and have employed able scientists. But the drawback is that the CSIR system has no well

defined objectives. Science and technology are today the product of organised systems and have so developed in USA and other industrial countries. The problem in India, therefore, is not of investment patterns in research and development but of defining clearly the technological goal and then giving it to the public/private sector for development.

Shri Haksar emphasised that there is a need to re-examine the whole complex system of education, from primary to university. The functioning of key institutions should be made more useful. The Planning Commission should be a highly professional body with political linkage at Prime Minister's level and should indicate what is possible under the given political parameters. The Commission should produce plans with alternative assumptions. It should also provide a plan-frame for all the States. Resource mobilisation in India is regarded as a cardinal political sin. Internal resource mobilisation within a democratic framework is the heart of the matter for planned development with self-reliance. The resources then need to be utilised in the best possible manner to satisfy the basic needs of the 700 million people.

3.2 Resource Mobilisation at Centre and States

Discussion Leader
Prof. M.J.K. Thavaraj
Indian Institute of Public Administration
New Delhi

The constraint on five year development plans due to continuing limited scope of mobilisation of financial resources at the Centre as well as in the States is becoming more intense despite increasing deficit financing. Some of the reasons for the recent shortfall in the resources of the Centre are : (i) higher Central assistance to States, (ii) decline in surplus from current revenues due to increase in expenditure on defence and higher interest payments, and (iii) lower contribution of Central Public Enterprises and higher non-plan loans to Public Enterprises. The short falls in States' resources occurred mainly due to : (i) lower surpluses from the current revenues, (ii) substantial decline in the contribution of their enterprises like State Electricity Boards and Road Transport Corporations, and (iii) non-fulfilment of the Annual Plan target of Additional Resources Mobilisation in a few States. In case of States, the shortfall in resource and expenditure was met through accommodation from the

Reserve Bank of India. The overdrafts of States have increased to about 19 times over the last twelve years. At the end of March 1970, States had outstanding overdrafts aggregating at Rs. 92 crores which soared to Rs. 1,743 crores involving nearly 12 States. These were cleared number of times with Central assistance and it was hoped that the States would not resort to overdrafts again. The problem had appeared again and again.

Analysing the problem of resource mobilisation, Prof. M.J.K. Thavaraj pointed out that main base for mobilisation at Centre is industrial and commercial enterprises. Due to focus on industrialisation the Central tax instruments have an expanding base. On the other hand, main base at the States level are land and land related agriculture which cannot be expanded very much. The large bulk of income from land accrues to the subsistence sector and the available instrumentalities are far too inadequate to mop up the large surpluses that have accrued to the rural elite in recent years. The existing land revenue system is regressive and static. Even where progressive surcharges are imposed on land revenue it is incapable of tapping enough out of the income of these who have ability to pay. There is demarcation between Centre and State functions and their sources of revenue under the federal structure of the country. The residual powers belong to the Centre. Over the last three decades, the scope of welfare and development activities of the States had been increasing and the State sources of revenue had not expanded correspondingly. The resources of the States have also been reduced due to expanding

coverage of tax on certain commodities by Central Government which were earlier being taxed by the State Governments. In addition to relatively more elastic taxes, Centre has massive command on sources of fund like foreign exchange, credit and surpluses from public enterprises. In case of States, the per capita tax depends on the extent of its economic development. There is also inability of the States to borrow from the financial institutions as these institutions work at the command of the Centre.

According to Prof. Thavaraj, most important fiscal problem in a federation is the manner in which the gap between needs and resources are covered. Its acuteness is inherent where fiscal powers are concentrated in the Centre while federating units are loaded with expanding functions. Though fiscal transfers are natural and justifiable, both givers and takers are dissatisfied with the existing arrangements. The fact that more than 60 per cent. of the plan finances in the States was to be met through such transfer until the Fourth Plan is a pointer to the extent of fiscal imbalances in India. Central assistance to State plans has sharply declined since the introduction of Gadgil Formula. Under the Sixth Plan, Central assistance is not more than 30.5 per cent. of the State Plans outlay.

The widening gap between resources and need is often attributed to the failure of the States to tap their own resources rather than as a problem of imbalances arising from the differential impact of development on the resources and responsibilities of the Centre and the States. The non-plan expenditure

and funds requirement for maintenance in States are viewed critically. The main issue, according to Prof. Thavaraj, is that whereas States' expenditures are subjected to rigorous scrutiny both by the Finance Commission and the Planning Commission similar arrangements do not exist for a searching examination of the growth of expenditure in certain sectors of the Central Government. It cannot be established that the States have fared any worse in mobilising tax revenues and profits from public undertakings if differences in the nature of instrumentalities of taxes and nature of undertakings are taken into account. By and large, public utilities dominate among State undertakings, and commercially oriented industries are in the Central sector. In the absence of any other facility such as command over resources or regulatory apparatus, the States are left with the unpleasant task of wooing large scale industries. Even here, tax inducements are of limited effectiveness. In most cases, such promotional efforts are made by selling services and supplies at below cost. Such losses are of a different nature than those arising from market-oriented industries in the Central sector. There is a need to review the fiscal policy. Plenty of resources could be transferred from the Centre to the States if Central expenditure could be trimmed to eliminate waste and duplication in their expenditure. If this is done, both the Centre and the States can mobilise more resources than what they do at present. The existing system of allocation of funds adversely affects the economic interest of the people below poverty line. The resources required for infrastructure facilities like power, transport still continue to have

higher priority in allocation of funds, more so due to rising cost of construction and irrigation projects.

In the course of discussion, it was pointed out that even within the existing set-up there is considerable scope to augment financial resources at the State level. In some of the States, productivity from land has gone up considerably, but it has not contributed to increase the State resources. The prosperous agricultural farms were benefited from expanded irrigation facilities and enjoyed various kinds of subsidies on their inputs, but these do not contribute to the State resources. Tax on agricultural income with suitable degree of progression could be one such source to augment resources at the State level.

3.3 Integrated Planning—Grassroot and Upward

Discussion Leader
Prof. Kamta Prasad
Indian Institute of Public Administration
New Delhi

Integration of planning calls for spatial polarisation of economic activity of different sectors through multi-level planning. Multi-level planning concept, according to Prof. Kamta Prasad, developed out of the realisation that planning has to be decentralised. Historically, planning is a centralised process based on building certain models as an exercise of optimising the use of various resources for achievement of well defined objectives. The centralised concept of planning received inspiration from Soviet experience. Soon it was realised that the centralised planning did not correctly perceive peoples' problem nor possess reliable data for solving problems at grassroot level. These indicated a need for the decentralised planning. It was thought that aspirations of the people at grassroot level could be best met through Micro Level Planning. But there is some limitation to the process of decentralisation in planning for economic development. There are nearly 400 districts in India. If all the economic decisions are taken at these levels, this will lead to

imbalance in demand and supply of traded commodities. As such, complete decentralisation is not feasible. Decentralisation must take place within the framework of a National/State Plan so that both the objectives of optimisation and consistency are achieved. The space perspective calls for breaking of regions into smaller operating homogeneous economic units and reclassification of functional breakdown of various jobs of economic development.

The process of identification of hierarchy of economic functions for multi level planning was initiated under the leadership of Prof. D.R. Gadgil. Guidelines for the formulation of District Plans were prepared by Planning Commission in 1969. Special development programmes like DPAP (Drought Prone Areas Programme), Food for Work, Minimum Needs Programme, Small Farmers Development Agencies, MFAL (Marginal Farmers and Agricultural Labour) were conceived to provide certain basic amenities and opportunities of work to people at grassroot level and assist them in adoption of improved agricultural technology. Multiplicity of programmes and multiple agencies created problems of horizontal coordination. These programmes suffered from the constraints not financial, but (a) organizational inadequacies, and (b) lack of clear-cut plans of development. According to Prof. Kamta Prasad, the experience of multi level planning so far had been that the local plans virtually amounted to aggregation of programmes visualised at the State level and collection of felt needs of the people without working out their financial and

other implications. The multiplicity of programmes operating in overlapping territories with different funding patterns blurred the programme objectives and created difficulties in effective monitoring and accountability. To rectify these inadequacies, the Sixth Plan proposed to have District Development Officers enjoying the rank and status of District Magistrate/Collector. Some of the States have already acted in this direction and have also appointed District Planning and Development Councils.

According to Prof. Kamta Prasad, six essential pre-requisites for successful multi level planning are: (i) establishment of suitable planning machinery manned by professional experts, (ii) functional breakdown of various jobs of economic development in space perspective, (iii) strengthening the data collection base and making available the required information, (iv) rational and scientific methods of allocation of funds at district and local levels, (v) locating the decision making right nearest to the scene of economic activity on the basis of alternative strategies of development, and (vi) association of legislators and others elected representatives of people and voluntary organizations, bureaucrats and technical experts in planning and implementation.

While sharing the experiences of different States by seminarists it was pointed out that though formula for allocation of resources among districts was still to be formalised, yet according to the current practice in States like Maharashtra, Gujarat, U.P., Karnataka and Bihar, weights had been assigned to different economic indicators for allocation of

funds among districts out of available resources. Between 40 to 50 per cent. weight was assigned to population, 10 per cent. to number of scheduled castes and tribes, 10 per cent. to marginal and small farmers, and the balance to the extent of backwardness of a unit measured in terms of drinking water, medical facilities, per capita power consumption, road mileage and, area under irrigation. One major problem experienced by the planners at the district level is non-availability of right type of expertise. A view was expressed that funding must be centralised and block plans must not be used as an instrument of implementation plan. It should be used as Perspective Plan to be implemented according to availability of resources. Under the present set-up, nearly 80 per cent. of plan expenditure at district level is committed and this imposes a resource constraint. In some of the States, it was pointed out, that District Planning and Development Councils looked after both planning and monitoring functions and the system was working satisfactorily.

4. Project Planning

4.1 Techniques of Measuring Investment Merits of Project

4.2 Project Selection by Public Investment Board

4.3 Project Selection by International Financial Institutions

4.1 Techniques of Measuring Investment Merits of Project

Discussion Leader
Prof. Ram Prakash
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Explaining the various aspects of a project feasibility report, Prof. Ram Prakash pointed out that normally the financial institutions examine the project viability from the commercial, technical, financial and managerial points of view. The commercial aspects include, among others, demand forecasting, product markets and competitive position. The technical variables deal with location, material inputs, plant investment, environmental implications, choice and transfer of technology. The financial dimensions cover estimation of fixed and working capital, production cost, distribution and selling costs, financing of investments and liquidity and profitability analysis. The assessment of managerial aspects cover entrepreneurial capabilities of the project promoters, manpower and organizational planning, implementation and monitoring of project.

In the context of public sector projects, it is important to assess net national economic benefits

in addition to the financial profitability. The modern methodologies of economic benefit-cost analysis require complex calculations. These, among others, call for identification of direct and indirect benefits and costs, and use of objectively determined accounting prices. The soundness of the investment proposal can be assessed to a very great extent by rigorously applying the tests of cost effectiveness. These relate to measurability, feasibility, reliability, consistency and optimality of the project proposals. Measureability is the system's ability to evaluate its performance quantitatively. Feasibility test refers to the practicability or workability of various assumptions. It indicates the extent to which the project model described in the report can be operated as planned within the environment of work. Reliability refers to the extent to which the data given in the report are dependable. Consistency establishes balance between different parts of the system. There are wheels within the wheels and all must be mutually consistent. Optimality helps in establishing whether the choice among alternatives has been made on the basis of minimum cost and maximum return. These tests assist the appraisal agencies to raise questions and seek such information as can help in visualising problems and advance action required for effective implementation. According to Prof. Ram Prakash, the project success depends on the quality and reliability of data and information contained in the feasibility report.

The overall financial profitability of a project is

normally assessed by the following methods :

i) Simple Rate of Return on Investment;
ii) Payback Period; and
iii) Discounted Cash Flow Techniques *viz.*
   a) Net Present Value/Excess Present Value;
   b) Internal Rate of Return/Yield Rate; and
   c) Benefit-Cost Ratio.

The simple rate of return method refers to the ratio of net profit to initial investment (fixed and working capital) either in a normal year of operation or as an average on total project life. Selection of a representative year of operation is difficult to be identified. This method ignores varying performance over the total life of the project. All the inflows and outflows entering in the analysis over the total life of the project in both the methodologies for simple rate of return, do not take into account the time value of money. The payback period measures the period required to recuperate the original investment outlay through profits earned by the project. A project with minimum payback period is preferred. This method, though commonly used in economically advanced countries, is not solely relied upon for investment decisions. It ignores net cash earning of projects after payback period and does not take into account the time value of the cash inflows within the prescribed payback period. It may be a misleading criterion if selection is to be made from two or more projects with different gestation periods and not having similar time phasing of net cash earnings. This method pays greater attention to liquidity than to profitability. The discounted cash flow techniques

have wider acceptance to assess investment worthiness of projects. According to accepted theory, it indicates an appropriate way to compare future benefits with the present costs. It measures the value today of a 'goose that will lay golden eggs each year'. It presents a rate which can be compared with external earning opportunities and takes into account variations in the earning life of comparable projects through time value of money concept. The period of recovery of capital in terms of its present value over the life of the project can also be assessed.

Prof. Ram Prakash explained the simple methods of calculating internal rate of return and a recent extension of the discounted cash flow technique for determining the economic cost of products ensuring a given rate of return. He illustrated the use of this theory to calculate economic price of coal and electric power.

Regarding assessment of technical merits of a project, Prof. Ram Prakash clarified that it is usually done through peer appraisal. Regarding technology transfer in mega projects he mentioned that the imperfect international market, monopolistic prices and restrictive trade practices by industrial giants retard to some extent the access of developing economies to international technology. The industrial giants have formed cartels and established binding contractual ties among themselves. These, among others, stipulate the system of sales, mechanism of meeting before filling tenders, guidelines for fixing prices, procedures for allocating orders and payment of compensation by

successful bidders to those who bid at higher prices. Details of these practices are highlighted in the study made by Barbara Epstein and Richard Newfarmer in respect of International Electrical Equipment Industry. It was published in the Cambridge Journal of Economics: March 1982. The investigation shows that cartelised prices are higher by 15% than those under workable competitive conditions. The study supports Helleiner's general conclusion that product and technology markets are biased against the poorer developing countries. The transfer of technology quite often is in the form of assembling, labelling, marketing, advertising, etc. The critical formulation of products and design and redesign of machines are rarely given. This is particularly true of drugs, chemicals and petrochemical machinery. If we start an assembly line for foreign components, it in fact will be having a 'screw driver' factory. It is no technology transfer. It is common experience that some of the multinational companies under the garb of intermediate technology often transfer obsolete and outdated technologies. The technical success of the project can be ensured if we take into account the above aspects and build the technical expertise in the country. The peer appraisal that is seeking the assessment of available experts in the field, is useful to a great extent.

4.2 Project Selection by Public Investment Board

Discussion Leader
Shri Harbans Singh
Secretary (Expenditure)
Ministry of Finance
And Chairman
Public Investment Board

Shri Harbans Singh, former Chairman of Public Investment Board (PIB), pointed out that the Central Government has a diffused and elaborate system for selection of projects. The PIB advises the Cabinet on investment worthiness of a project. Technically, it does not select the projects as such, though certain measure of selection is implicit in the process of recommending to the Government on rejection, substitution or modification of the projects. Real selection of a project is made in the process of planning for economic development which is within the ambit of the Planning Commission. The Commission has its machinery for estimating the demand, supply, and the gap between the two, and the desired extent for creation of capacities towards meeting the gap, etc.. These variables are determined in consultation with the administrative ministries and get reflected in the Plan document. Thereafter, the process of formulation of individual projects takes place. After when

the basic parameters of the project have been drawn up in terms of the size of the investment, location and technology, PIB comes in picture as a final body of officials which recommends to the Cabinet for its approval, rejection or modification.

Normally a detailed scrutiny of project reports is done at pre-PIB meetings convened by the financial advisers of the concerned administrative ministries and their recommendations are made available to the PIB. The PIB makes a *de novo* appraisal of the project considering all the aspects. It is not obliged to endorse the views of the administrative ministries or of various appraising agencies. It does not, however, mean that the PIB has a *carte blanche*. Even before the project comes to the PIB, certain commitments sometimes are made. As such, it becomes difficult in actual practice to reject the project proposal at that stage. It can, in those cases, only modify or make suggestions for improvement. This, according to Shri Harbans Singh, is an important limitation of the system.

Describing the procedure of considering a project proposal, Shri Singh said that an important feature of the meetings of PIB is that, in addition to the core members of the PIB, representatives of the administrative ministries and heads of the concerned public enterprises are also invited. In cases where the members of the PIB are not satisfied with the answers and the information furnished by the project sponsoring authority, the decision is deferred to its subsequent meeting. Usually, the PIB meeting takes place every fortnight, so that there is no hold-up in the consideration of the projects.

Sometimes special meetings are also called. By and large, the time taken for disposal of the applications received by the PIB is 3 to 4 weeks. Based on PIB's views, a summary of recommendations is prepared by the financial adviser for submission to the Cabinet through the Ministry of Finance. This is usually done within a week. After the approval of the project by the Cabinet the concerned administrative ministry issues a formal approval and that date is taken as the reference date or zero date for the implementation of the project. Normally, the Cabinet approval is obtained within a month.

Reviewing the past experience of implementation of projects, Shri Singh pointed out that there was hardly any project which did not suffer from time and cost escalations. Very often, the administrative Ministries start working on the project only after the Cabinet approval has been obtained. This, to a large extent, contributes to the delays that have been experienced. In the private sector, by the time projects are approved by the financial institutions like IDBI or IFCI, these are in advance stages of implementation. In many cases, in public sector, the project reports or even the feasibility studies are prepared after the initial approval of the Government. Sometimes the search for foreign collaboration for technology starts after PIB approval. It is not tied up before hand and this takes time. By the time the study is prepared and other loose ends tied up, the cost estimates get out of tune. The result is that many projects approved by the PIB do not get implemented for a number of years. It is not

uncommon to come across cases where the cost estimates go up by 100 to 200 per cent. or even more. All these happen despite the detailed scrutiny by the PIB of all aspects like demand, supply, technology, management set-up, marketing arrangements and, availability of funds.

The inadequacies in the feasibility reports are major problems experienced by the PIB. Most of the project reports are based on deficient information. *Secondly*, there is a common tendency on the part of the sponsoring Department or Ministry to deliberately underestimate the costs at the time of getting the approval. After when some investments have been made and project reaches a stage when it would be difficult to withdraw, more funds are asked. *Thirdly*, at the time of initial decision, adequate thought is not given on the aspect of the management set-up and very rarely the management team is in position. This is unlike what happens in the private sector.

Some changes in the procedure and methods of work of the PIB, according to Shri Singh, might improve the position. The first decision of the PIB should be on undertaking a comprehensive feasibility study. A good feasibility report is an essential pre-requisite for a sound project or investment decision. For that purpose, adequate funds, including foreign exchange, may be sanctioned to the concerned Ministry. Thereafter, the decision on the investment worthwhileness of the project might be taken. After final approval all efforts should be made to complete the project within the shortest possible time. It should be possible to implement

the project as per schedule because initial rigorous examination of various aspects of the project would help in taking advance action on all problems and preparing realistic time and cost estimates.

The present system of releasing funds for public sector investment also needs some modification. Currently, the public sector enterprises are able to obtain funds for project too easily and at very low cost which in fact is a hidden subsidy. These should be subjected to the same type of financial discipline as the projects in the private sector. The funds should be released not through the Government budgetary mechanism but through some public sector financing agency, either a new Development Bank set up exclusively for the public sector or through one of the existing public sector financial institutions. This will force the public sector enterprises or the concerned Ministries who sponsor new projects or expansion of the existing ones to present to the said agency well prepared documents indicating all the parameters of investment. The financing institution shall be in a better position to appraise the projects through professional appraising agencies or by developing a centralised expert body.

According to Shri Singh, the quality of feasibility reports can be improved if every major development department of the Government has a project division consisting of professional experts who can be held responsible for various assumptions in the projects and for monitoring their progress.

In the discussion that followed, a number of

other suggestions were made. Management Information System (MIS) should be installed in every Ministry to help them in project planning and implementation. Usually great emphasis was being laid on 'appraisal', and the 'implementation' was taken for granted. A lot of attention is required to be given to other aspects in between these two stages like recruitment of right kind of personnel. The concept of public sector, as visualised two decades ago that it should venture in the areas where no one was forthcoming, is no more relevant now. Whether a project should be taken up by private or public sector, constitutes a crucial decision today. For instance, most of activities of the State Corporations can be taken up by the private sector. The public sector should confine itself only to carefully selected and deserving projects.

On how the PIB deals with the cost escalation, it was clarified that in cases where the escalation was over 20 per cent. the project would again require the PIB clearance otherwise, the Ministry could take decision on their own. But the sad part, according to Shri Harbans Singh, is that each project is dealt with independently and there is nothing to ensure that the deficiency of one project is not repeated in the other. No retrospective studies are undertaken reflecting the weaknesses of the system andthe lessons that can be learnt. Shri Singh supported the idea of undertaking studies of some projects already completed for improving the project planning and implementation, and the appraisal procedures.

4.3 Project Selection by International Financial Institutions

Discussion Leader
Mr. J.D. Roulet
Chief of Mission
World Bank, New Delhi

Giving a brief review of working, Mr. J.D. Roulet, Chief of the World Bank Mission in India, mentioned that the World Bank is the largest financing agency in the field of development among the International Financial Institutions. It includes International Bank for Reconstruction and Development (IBRD), International Development Association (IDA) and International Finance Corporation (IFC). It has 142 countries as members and its staff comes from over 100 countries. Over the last 35 years, this group has lent over $ 95 billion for about 3,000 projects in more than a hundred countries. It is currently assisting nearly 1,600 projects involving $ 150 billion. In the financial year 1982, the group lent $ 13 billion of which $ 2 billion were lent to India. In addition, the World Bank group does co-financing jointly with other financial institutions like International Monetary Fund and Asian Development Bank. It has also helped in

setting up several other international institutions over the years such as, the African Development Bank and the Latin American Development Bank. The group also supports operations of International Fund for Agricultural Development (IFAD) and co-operates with various United Nations Organisations like UNDP, UNIDO, UNESCO and FAO in their investment programmes. Despite the important role played by the World Bank it must not be forgotten that in the total investment effort of say, India, the foreign investment is about 7 to 8 per cent. of which 4 to 5 per cent. is from the World Bank. Thus, about 92 per cent. of the total investment is from India's own resources.

Highlighting some of the basic characteristics of the working of the World Bank and their difference with other institutions, Mr. Roulet said that the World Bank group is a multilateral/multi national cooperative institution and hence its policies emanate from the consensus of the people representing the participating countries. *Secondly*, by its statute, the Bank is forbidden to take decisions on political considerations. The political environment in 'economic' decision making, however, cannot be ignored. *Thirdly*, the Bank is supposed to be a lender of the last resort in the sense that it makes available finances which cannot be obtained from other sources on appropriate terms. *Fourthly*, there is some division of work among various international institutions. For example, UNDP and UNIDO help in preparation of feasibility reports.

Regarding the criteria for financing that are

followed by the World Bank, Mr. Roulet pointed out that it lends only for projects. The definition of a project is, however, flexible. For instance, programmes involving structural adjustments in an economy do qualify. Projects in private sector are also considered. The project selected must help in economic development of the country. As such, not only manufacturing projects but infrastructural projects, education programmes, also come under its purview. The projects financed by the World Bank are carried out by the borrowing country or its agency and not by the Bank. The monitoring and administration of the project is the responsibility of the executing agency. The Bank exercises control over how the funds are utilised. *Finally*, after completion, the Bank gets it evaluated through an independent body to identify lessons, successes and failures.

Mr. Roulet further explained the involvement of the World Bank in various stages of the project life cycle. The *first* stage is identification of development projects. The main business of the World Bank is economic development; so it closely looks at the economy of all member countries on a regular basis. For important countries, annual economic reports are prepared, outlining the priorities, bottlenecks, achievements, areas of action, etc. In addition, sectoral analysis is also done. All these help in identification of the projects. This is a continuous dialogue and often project ideas emerge from regular meetings of the Bank representatives with the concerned Departments like Economic Affairs

in India and the Planning Commissions of the respective governments.

The *second* phase in the project cycle is the formal preparation of the project report. It is the most crucial stage for the success of a project. The project preparation differs from case to case and from country to country. Some countries have capabilities, others do not. It may be fairly complex in cases of gigantic schemes because all aspects like survey, cost, feasibility, location, outputs and inputs have to be looked into. In the preparation stage, a technically feasible project which is also economically justifiable is formulated. For improving the quality of feasibility reports, right institution and people have to be associated. The regional offices of the World Bank, like the one in Nairobi, also help in this regard.

The *final* stage in the project cycle is the appraisal. The Bank gets its appraisal carried out with the help of its own experts. They visit the project and give their recommendations on financing of the project and its merits in the context of economic development of the country. The appraisal is comprehensive and involves all the aspects like technical, marketing, managerial, financial and execution. Over the years, the mechanism of development has been better understood and some changes in priorities of financing the projects have occurred. For instance, earlier the Bank did not lend in the oil sector, but now it does. Some countries face balance of payment difficulties requiring structural adjustment and they approach the

Bank. Such problems are now sympathetically considered.

Regarding the inflation accounting in the cost estimates, Mr. Roulet said that the Bank provides margins for physical contingencies and price increase. An assessment of price trend affecting the project both within the country and outside is made through regular forecasts by the Bank's economists. Necessary provisions are made for the same in project reports. The Bank normally does not like to do the supplementary financing. In some small countries which were unable to absorb the cost over-runs due to external factors the Bank did occasionally provide supplemental financing as an exception. The Bank appraisal is based on project costs including contingency allowances, and output prices expected to be prevailing at the time of completion of the project. The Bank also undertakes sensitivity analysis to weed out marginal projects. The consequences of delays in the project implementation and consequent cost escalations are difficult to assess. To begin with, one has to agree on a realistic schedule, but even then, unexpected delays can occur. Some are of administrative nature; for instance, time spent for compliance with formalities and regulations of borrowing countries. The delays in international bidding for some Indian projects due to various foreign exchange regulations were cited as illustrations.

On whether the Bank would be interested in financing regional co-operation projects rather than bilateral national projects, Mr. Roulet said that the Bank has already been financing such projects. For

instance, he quoted the cases of loans given to the East African Community for Railways, Telecommunication, etc., which were guaranteed by the Governments of Uganda, Kenya and Tanzania, and of Indus Water Treaty—under which loans were given to both Pakistan and India to develop irrigation facilities from the Indus river.

5. IMPLEMENTATION AND MONITORING

5.1 Effective Control Systems for Economic Development

5.2 Monitoring Systems

5.3 Project Implementation Plan

5.1 Effective Control Systems for Economic Development

Discussion Leader
Shri K.V. Ramanathan
Secretary
Planning Commission

Shri K.V. Ramanathan stated that control systems of economic development involved monitoring and assessment of achievements at various levels and at different points of time. These have to ensure that the progress of developmental programmes is, as nearly as possible, along the paths charted at the time of original planning and the achievement of targets is not off the mark. In these respects, failures are more marked on almost every aspect of development. A large number of failures, shortfalls and cost and time over-runs in project implementation over the last many years of planning can be attributed to lack of efficient control systems.

The monitoring of a programme can be taken up at the level next higher to that of actual implementation. Those who monitor should have the yardsticks and methods of assessment of the progress at regular intervals so as to facilitate taking up of remedial steps. It calls for a mechanism for

flow of information up to the top of the organizational hierarchy. This system should be so established as to have maximum of the information flowing through the minimum number of channels.

Very often different organizations call for regular and *ad hoc* reports in different proformae as a part of their monitoring work. The information obtained at different points of time in respect of a particular project or plan achievement for a specific period usually varies. Much of this is due to the fact that different sets of forms are prescribed and different kinds of analysis are made by different monitoring agencies. Under the circumstances, it is not surprising that the implementing agency very soon becomes indifferent to what information is sent and what kind of forms are filled.

The introduction of modern tools of management claims to overcome these deficiencies. In the last few years, attempts have been made to develop reliable Management Information Systems for effective control. Efforts are being made in the Central Government to simplify the management information system and make it homogeneous so that different monitoring agencies draw consistent conclusions from the same set of management data. In this regard, much headway has not been made as so far, only a few Central Government Departments have been involved in establishing modern monitoring systems. In the States, the monitoring system is still unorganised. As a consequence, projects are sanctioned and continued without ascertaining periodically the type of problems confronted and reorientation needed. In many cases, during the

implementation stage certain factors are identified, which necessitate modifications in the original project, resulting in rise in cost and capital/output ratios. The project very often becomes totally uneconomic due to unexpectedly low rate of return. All these indicate the need for effective monitoring through efficient Management Information System.

Planning Commission monitors the progress of major plan projects of Central and State Governments through quarterly and annual reviews. A report is also prepared for the Cabinet/Cabinet Committees. Concerned Cabinet Committees deal with specific areas and problems of development projects. The same is probably being done in the States. Much is yet to be done for perfecting the system.

Planning Commission monitors larger projects involving cost above a specified level. This has, to some extent, checked the cost over-runs in the recent past. If the cost over-runs are allowed to go on as before, then the available funds will be inadequate to complete even those schemes which have been already started. This will adversely affect the whole system of planning.

According to Shri Ramanathan, an essential prerequisite of efficient system of planning is to have an effective Management Information System at all levels from the lowest to the highest. The system should be simple and, as far as possible, uniform so that there is no confusion in collection of information and assessment of situations at different decision making levels.

5.2 Monitoring Systems

Discussion Leader
Shri Tarlok Singh
Former Member
Planning Commission

Shri Tarlok Singh emphasised the need for an effective monitoring and control system at the Centre and in the States for achieving planned targets. During the Second Five Year Plan, it was realised that errors in planning and shortfalls in achievement often occurred due to lack of precise information and for want of effective coordination among the various implementing agencies of the Government. This led to the necessity of re-appraisal of the Plan in 1957 and of determining a core plan for the remaining plan period.

During the Third Plan, units were established in the Planning Commission on Management Information System and Development Administration. A number of studies were subsequently conducted on PERT/CPM etc. as applied to Indian conditions and an Information Room was also set up. Shortfalls between targets and achievements continued to occur and, in particular, several social objectives of the Plan remained unrealised. Almost

always, there were contradictions between the Plan targets and the resources provided for achieving them. The setting of inappropriate targets is one of the major weaknesses of the planning system. These often exceed the capacity of available financial, manpower and other resources. Medium-term targets over the Plan period are fixed to a large extent in relation to the assessed needs and potentials of the economy, while financial resources have to be made available on yearly appraisals.

A consequence of this dichotomy between short-term economic management and medium and long-term economic planning is the widening of gap between the goals and targets set in the plans and their realization from year to year. Mid-term appraisals undertaken by the Planning Commission have helped to reduce this gap in the context of each given plan. The first mid-term appraisal was done during the Second Five Year Plan and the second one during the Third Plan. There was no mid-term appraisal during the Fourth Five Year Plan. Subsequently, mid-term appraisals were made during the Fifth and the Sixth Plan periods. The gaps between planned targets and their realisation widen in the absence of a system of continuous re-planning. This makes the five year plan periods somewhat rigid. One way to meet this problem would be if the detailed five year plans were confined to projects whose feasibility studies had been fully prepared even though some changes might be necessary later due to variations in prices and other factors. At the same time, resources are provided within the Plan to be allocated to projects as and

when they have been fully worked out. This would make both for financial discipline and for continuity in planning and implementation and avoid inclusion of projects on extraneous considerations.

During the late 50s and the 60s, the problem of sectoral imbalances appeared at many stages. There were large gaps between demand and supply. To a considerable extent, these imbalances could be anticipated and matching provisions made in terms of coal, power, transport and other major economic inputs, specially for the public sector in different regions at the time of preparing the Five Year Plans. But the system of inter-sectoral coordination was not sufficiently well planned. Much of the planning in this respect was short-term in nature, without an adequate base of information flows.

There also exists a certain lack of balance between projects and activities which have different gestation periods. This needs to be thoroughly reviewed not only in terms of five year periods, but also on a year-to-year basis.

While preparing development plans, both the long-term and short-term needs have to be kept in mind. This is particularly important where new investments are being made. The system of long-term planning has to be in harmony with the short-term objectives. This calls for constant re-planning and rethinking.

In devising effective control and monitoring systems, all these variables of planning should be taken into account. According to Shri Tarlok

Singh, the monitoring systems should also help specifically in exploring disparities in economic conditions of different sections of the population and imbalances between rural and urban areas as well as between different regions. A systems approach is needed for developing effective control and monitoring systems.

5.3 Project Implementation Plan

Discussion Leader
Prof. Ram Prakash
Indian Institute of Public Administration
New Delhi

According to Prof. Ram Prakash, substantial time and cost over-runs during project implementation are of common occurrence. A recent study made by the Committee on Public Undertakings (1981-82) of Lok Sabha reveals the gravity of this continuing problem. Out of 49 projects costing over Rs. 20 crores each, commissioned/expected to be commissioned during 1974-79, 5 projects were completed on schedule. The rest are running behind schedule. The time lag is between one to two years in 10 projects, two to three years in 10 projects, three to five years in 13 projects and five years and more in remaining projects. Two projects had no escalation in cost estimate till then. Of the remaining 47 projects, 9 had escalation in cost of less than 50 per cent., 15 between 50 and 100 per cent., 17 between 100 and 200 per cent., and 6 more than 200 per cent.. Another study of the Bureau of Public Enterprises revealed that 37 Public Sector Projects had cost over-run of Rs. 2,041 crores. Of the total increase, 46.48% was

attributed to price escalation and changes in duty and exchange rate and 6.8% to capitalisation of interest. Inadequate planning, omission, modification and other unspecified reasons accounted for another 46.2% of the cost over-run. A major part of this cost over-run was controllable by suitable management actions and through application of appropriate management techniques. In addition, a part of the increase in cost due to price escalation can be controlled if project is implemented in time.

The position of irrigation and thermal power projects in this respect is similar to industrial projects. According to the Expert Committee on Irrigation, the cost of 64 major irrigation projects had increased from initial estimate of Rs. 1,503 crores to Rs. 3,127 crores. The schedule slippages varied from 2 to 9 years. The cost of 16 major thermal power projects had shot up to Rs. 1,863 crores from earlier estimate of Rs. 957 crores.

The consequences of delay in execution of these projects are also very substantial. For instance, 72 months delay in completion of Bokaro Steel Plant is estimated to cost the nation Rs. 3,000 crores. Similarly, a day's delay in setting up of 2000 MW super thermal power plant is assessed to cost the nation a loss of total production worth Rs. 30 to 40 crores.

Analysis made of the working of projects under construction indicates that all is not well with the management system of project implementation. A substantial part of the time and cost over-runs is controllable through proper planning.

The efficient implementation of projects require scientific phasing of their work components in right sequence. The large size, inter-relatedness and complexity of modern projects call for undertaking multifarious tasks simultaneously. In the past, various activities of complex modern project had been carried out independently without any integrated view of other parts which resulted in bottlenecks and delays. The management techniques which were used for planning and control did not help in taking an integrated view of the project activities. For monitoring the projects, great reliance had been mainly on Gnatt or Bar Chart. Although the use of this technique helped to a great extent, particularly in construction stage, it fails to indicate the inter-relationships of various associated activities and the effect of delays in some work on subsequent tasks or on project completion data.

To meet the above deficiencies, the 'Network' techniques of PERT (Programme Evaluation and Review Technique) and CPM (Critical Path Method) were developed in 1957-58. Though PERT and CPM were developed independently, their basic elements are common. PERT/CPM or Network is a technique of planning, scheduling and control of project through an integrated management system. It helps in implementing the project within time and according to the prescribed budget.

Explaining the salient features and mechanics of application of the Network technique, Prof. Ram Prakash pointed out that the technique is applied in six steps viz. (i) setting the network; (ii) estimation of time requirements; (iii) identification of

critical path and, if necessary, its compression; (iv) resources optimisation; (v) resources allocation; and (vi) scheduling or setting the time track. He also pointed out that the steps (iv) and (v) are important recent extension of the technique and are still in preliminary stages of application.

The Network is set with three components namely, 'Events,' 'Activities' and 'Paths'. An 'Event' is a specific definable accomplishment in project plan. It does not consume any resource and is achieved at a point of time. An 'Activity' is performance of work between any two 'Events'. It is usually a time and other resource consuming element in a network plan. There can be a zero time activity called 'Dummy Activity' which is employed to indicate logical sequencing of jobs and their relationships. 'Path' is any connected chain of jobs to be performed in the sequential manner.

To assess the project duration, three steps are to be gone through in the stated sequence order : (i) the estimation of the Activity Duration Time (t_e); (ii) calculation of the 'Earliest Expected Event Times' (T_E); and (iii) working out 'Latest Allowable Event Times' (T_L). The T_E value of the end event of the project network gives the earliest time at which the project would be completed. The time which is allowed for completion of the project is known as latest allowable time (T_L) in respect of the end event of the project network.

Any connected chain of critical jobs from first to last event is called 'Critical Path'. The job is critical if there is no 'slack'. Slack is the excess of

available time over required time i.e. $T_L - T_E$. There are two criteria for identification of a critical path on a project network. These are:

(i) the algebraic value of the event slack in respect of the events on the path should be minimum when compared to any other path;

(ii) it is the longest time path of the project network.

The Critical Path will require close watch and helps in application of the principle of 'Management by Exception'. In case the T_L value of the last event is less than its T_E value there will be negative slack on the end event as well as on the event falling on the Critical Path. This shows project is behind schedule and calls for the efforts to compress the Critical Path. This can be done in various ways like transferring resources for implementation of project from non-critical to critical activities, parallelling of activities and increasing resources. Increasing resources to reduce time should be last alternative to be exercised by the project manager after analysing costs and benefits.

The use of scarce resources in a project is dependent on load of work and is often not uniformly distributed. The optimisation of resources is facilitated with the help of 'Activity Float'. The implementation of project activities constitutes two activity cycles—'Earliest Cycle' (at the earliest the activities can be carried out); and Latest Cycle (at the latest these can be accomplished). Within the available

float range, the scheduling of these activities is decided to ensure full possible use of concerned resources.

The activity float is also used for deciding a schedule of performance according to availability of scarce resources. The network showing the activity timings determined after optimisation and after taking into account the availability of inputs is called "Resources Based Network."

After determining the scheduling of performance of different activities ensuring optimum and uniform utilisation of men, machines and materials and integrating their requirement with their availability, a stage is set to indicate a time bound schedule giving calendar dates on which each job will start. This is setting time track.

The above stages of development and application of this technique were explained by Prof. Prakash with the help of slides, and several charts were circulated among the seminarists.

According to Prof. Ram Prakash, a well planned Network system has many potential benefits. It provides a logical thinking device for preparation of the project schedule and gives a working logical model. It identifies job critical to the completion of the project and provides a method for scientific allocation of resources. It works as a diagnostic instrument in detecting problem areas for improvement and gives a tool for supervision and control. In order to use this technique, specialists must

provide detailed analysis of activity sequence. The technique demands a technically rigorous initial presentation, continuous watching, analysis and reporting. It also demands a general understanding of the methods by all concerned with project implementation. It will lose its significance if not periodically updated. Sound organisation, effective contracting process and efficient monitoring systems are the essential pre-requisites for effective use of this technique in implementation of the mega projects according to prescribed budget and time schedule.

Since its introduction, the Network Technique is widely used in USA, Canada, Great Britain and is reported to have been introduced in Russia in 1963. Over the last many years it is being used in India by several organizations. The financial requirements of Plan funds for major projects under construction are determined by the Planning Commission on the basis of Network Technique. With the help of this technique, 20 to 40 per cent. reductions in time and cost have been obtained. Prof. Ram Prakash cited a specific case study from Indian situation showing greater effectiveness of Network Technique as compared to traditional methods. The study related to work called "Cold Repairs to Open Hearth Furnace No. I" of Bhilai Steel Plant. In case the usual 76 shifts time for repair was reduced to 53 through application of Network. He stressed the needs of wider and better application of this technique and emphasised that periodic updating is essential for its successful application.

6. ASSESSMENT OF PLANNING PERFORMANCE : PANEL DISCUSSION

6. Assessment of Planning Performance : Panel Discussion

Prof. A.M. Khusro
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(Chairman)

Shri S. Kumar Dev
President
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Shri R.K. Roy
Resident Editor
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Planning Commission plays a crucial role in socio-economic development of the country. In the initial years of planning under the leadership of Shri Jawaharlal Nehru, it enjoyed tremendous authority and status. After the mid-60s, according to Shri S. Kumar Dev, its status and role got considerably eroded and that made it a less effective instrument of development. The gradual erosion of authority and status of the Commission in his opinion can be attributed to three factors : (i) politicization of the Planning Commission; (ii) bureaucratisation and internal deficiencies; and (iii) resources constraints.

A number of factors had contributed to the politicization of the planning process. In the mid-60s the then Prime Minister Shri Lal Bahadur Shastri prevailed on the Commission to pay greater

attention to Annual Planning in view of the severe drought situation in the country and consequent lack of adequate resources. This resulted in postponement of the Fourth Five Year Plan and substitution of the five year plan by three Annual Plans. The Annual Plans are effective instruments in the hands of Planning Commission to bring about desired adjustment in the investment pattern with changing conditions within the framework of the five year plan. But in the absence of the framework of the five year plan, this instrument of Annual Planning was not effectively used. The Annual Plans were merely treated as budgetary exercises of the Ministry of Finance, rather than as a tool for development planning. Further, the Deputy Chairman of the Planning Commission had all along been a professional expert, but in 1970s it was filled by the Minister for Planning—an elected representive of people. During the period of Janata Government, the concept of 'Rolling Plan' was introduced and the tenure of the Fifth Five Year Plan was cut short by a year. In early 1980s, Planning Commission was without a Deputy Chairman, leading to complete vacuum at the top. After the general elections in 1980 the Congress (I) party again appointed the Minister for Planning as the Deputy Chairman of Planning Commission. These disjointed efforts weakened the functioning of the Planning Commission and politicization undermined its efficacy.

The second factor which contributed to the weakening of Planning Commission and thereby of the planning efforts, relates to staffing of the Planning Commission. Increasingly, it is being

staffed by deputationists i.e. bureaucrats from different departments/states rather than professional experts. This is reflected in wide-off-the-mark assumptions made by the Commission for development strategy and conceptualisation of the schemes which were later found economically unsound. It also adversely affected the quality of investment appraisal. Setting up of the Project Appraisal Division in 1972 filled the gap to some extent. Shortfalls in the implementation of policies and programmes to a great extent can be attributed to lack of efficient monitoring and evaluation mechanisms within the Planning Commission.

Lack of resources is another factor which aided the erosion of authority and role of the Planning Commission. It may not be uniformly true of the entire planning period. At times, there were plenty of resources. For example, when the external remittances were flowing in the country in the mid-seventies India failed to take full advantage of the situation by investing the resources in productive enterprises. On the whole, non-developmental government expenditure had been enormously increasing and resource constraint was of constant concern. Measures taken to augment resources did not ease the situation. The generation of resources was not commensurate with investment needs. *Ad hoc* additional revenues were raised sometimes even just before the presentation of the budget in Parliament. Public sector enterprises were allowed to borrow money from the banking institutions to pay off the Government loans, and thus creating tight

money market. The resources position seems to be getting worse.

According to Shri R.K. Roy, for assessment of planning performance one has to have a close look at other aspects of planning namely, its data base, the basic assumptions behind the plan estimates, procedures and technical analysis.

The data to assess the performance of planning are inadequate. If judged from the data given in official documents like Economic Survey or Notes for the Consultative Committee on Planning, the performance of the economy appears to be satisfactory. The data indicate a GDP growth rate of 6% per annum in the first two years of the Sixth Plan. This compares very favourably with the targeted rate. However, if the data are examined carefully the growth rate even in the said documents is an average one and is not trend adjusted. With more sophisticated trend analysis the growth rate would be much less than 6%. The available data do not reveal a true picture of the performance of the economy. The same is true of agricultural and industrial growth rates. In fact, the level of economic activity does not support 6% growth rate as indicated in the official documents. The latest available official figures put the aggregate GDP growth in real terms at 2 per cent., in 1982-83 over 1981-82. This is to be compared to 4.5 per cent. growth in 1981-82 over 1980-81 and, 7.5 per cent. growth in 1980-81 over the depressed level of 1979-80. These growth rates together imply a compound annual growth rate of 4.67 per cent. per annum over the

first three years of the Sixth Plan. The achievement of the targeted growth rate would require over 6 per cent. per annum growth rate in real GDP over the remaining two years of the Plan. This high rate of growth appears to be an extremely formidable task in view of inadequacy of investible resources, near stagnation in real agricultural income and the poor prospects in export market. This, in turn, would limit the industrial growth.

There had been liberalisation of imports in the first three years of the Sixth Plan. It contributes to slow down of production in inefficient industries. These industries may be disinvesting whereas the efficient industries which are in a position to take advantage of liberal import may be investing more. There is, however, no direct evidence to show whether the latter has made good the loss by the former. The balance of payments data do not adequately reflect the real picture due to periodic changes in classification by customs and also due to the reason that the price level at which these are reported is not known. In the absence of comparable detailed data, decisions are taken more on hunch rather than on the basis of technical analysis. Great reliance is placed on inferential method rather than on direct investigation method.

Regarding the assumptions behind the targeted growth rates, enough indicators are not available to test their validity. The trend data on capital-output ratios are not available. It is difficult to ascertain whether estimated capital-output ratios hold good or not. The growth rates in agriculture, industry

and other sectors are based on certain assumptions concerning planned outlays and likely performance in crucial infrastructure services such as railways, irrigation, power. The studies reveal that there had been shortfalls between targets and achievements of public sector infrastructure services. These have adversely affected the performance of the agricultural and industrial sectors. Shortfalls in agricultural output adversely affect the industrial growth rate because of the linkages between the two sectors. In the event of lack of domestic demand for industrial goods arising due to shortfalls in the projected agricultural income, industrial growth could be sustained by demand from external markets. There is no evidence of growth of demand in external markets also. It seems that the growth paths and the financial and monitoring instruments chosen to go through these paths probably are not appropriate. According to Shri Roy, the Indian plans are tilted in favour of heavy industries. In the models of all the Plans, agriculture is not given adequate attention. Of course, time to time efforts had been made to correct the tilt in favour of agriculture. For example, policies and programmes introduced in the later half of 1960s to bring about green revolution, were some of such efforts in the direction. These were not followed by policies and programmes to sustain the growth rate in agriculture. Cost over-runs and schedule slippages are the common features of our projects. In many cases, the cost of projects are deliberately underestimated. There are many other aspects which are not adequately taken into account at the time of formulation of Plan models. For example, due to

growth of income in the unorganized sectors, investments are taking place which are not necessarily in keeping with the Plan priorities.

Shri Roy also observed that under democracy, politicization of Planning Commission is unavoidable. He also observed that a right blend of generalists and specialists is a welcome proposition. Planning Commission should be staffed by such bureaucrats who have an aptitude for planning. Sometimes, IAS officers dominate the specialist staff. This is not a healthy practice and this seems to be happening in Planning Commission.

In the course of discussion, it was pointed out that with different political parties in power in different States, the plan priorities and models are increasingly becoming out of place. For example, in some of the States, mid-day meals programmes which are welfare-oriented, have been introduced at a scale leading to some shift of plan priorities. It is doubtful if the State Governments have the willingness and the ability to raise resources through taxation to finance such social welfare schemes. They are dependent on the Centre for aid. This has an adverse effect on the development activities.

Prof. A.M. Khusro, Member, Planning Commission who chaired this session, pointed out that Indian data might have a weak base but there was no deliberate attempt to consciously 'cook' statistics. The validity of the Indian data might be judged from the fact that half the world's exercises on planning models are based on Indian data. In this

sense, ours is one of the most planned countries and has set up an extensive machinery for improving the reliability of data. It is true that sometimes the data are not comparable over time, owing to changes in coverage and methodology. This is bound to happen when methodological improvements take place. It is also true that the available data are not adequate for the tasks ahead. For instance, in price statistics there is a total neglect of black market prices in land, housing and other essential commodities. According to Prof. Khusro, during the fifties and the sixties there had been an emphasis on public sector corporate activities in sectors like power, transport and communication. The private sector is the biggest beneficiary of the investment in these sectors. However, while this sector pleads for price decontrols in respect of output which it sells, it would not like the prices of the inputs like electricity, water or freight to be increased.

According to Prof. Khusro, conflicting opinions on priorities are natural in the development process. Despite such conflicts, one could say that the economic conditions of the people have improved. Even if it is accepted that the percentage of people below the poverty line has remained constant, it cannot be denied that the number of non-poor has considerably increased. With 40 per cent. of the population remaining below the poverty line, the total number of poor in 1951 works out to be 140 million and that of non-poor 210 million as against 280 million and 420 million in 1981 respectively. Thus, during these 30 years of develop-

ment 210 million people were uplifted into the category of non-poor. This is nearly equal to population of U.S.A. and is in itself a significant achievement of planning. Literacy too has gone up during this period. Between 1951 and 1981, 186 million people joined the category of literates. This is more than the population of several European countries put together. While recognising the felt needs of the people it is necessary to mobilise the resources for further development in the productive sectors of the economy. It is not a question of only welfare and no infrastructure or *vice versa.* It is a matter of relative emphasis on the two objectives of planning to get better results. The capital-output ratio is approaching six which is higher than that envisaged in the Plan. Factors like under-utilisation of capacity and disturbed industrial relations are responsible for the high capital-output ratio. Efforts have to be made to reduce ineffiiciencies in the use of capital.

7. USE OF COMPUTERS FOR ECONOMIC DEVELOPMENT

7. Use of Computers for Economic Development

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The microprocessor was invented in 1972-73, and combined with a few other units it becomes a complete computer. In the context of economic planning, computer plays a significant role. It can help improving the level of productivity of plan efforts through optimisation of resources. Adequate provisions for food, shelter, clothing or education in a country depend on available resources. Resources depend on productivity and, productivity can be improved by optimising the existing resources. This can be done only with the help of computers. Computers have opened almost limitless new dimensions of growth. These are playing a dynamic role in all the endeavours of life, business, industry, government, administration, mass communication, education or entertainment and, defence.

The computers are practically all-pervading. They have replaced human attention with improved performace in almost all activities. In the home

front, one can take the example of sewing machine. In the old automatic sewing machine, cams, levers and gears were used to set a sewing pattern. This required complicated mechanical components. The programmed instructions within the microprocessor can now cause the sewing needle to move in a precise way and produce the required pattern. In the various industrial processes where hazards are involved robots have replaced the earlier manual control systems by automatic processes. Digital watches and the 35 mm camera are other examples where microprocessors have been used. The wordprocessor developed about four years ago has greatly facilitated the office work. The information fed through a keyboard to the wordprocessor can be read on the screen, modified, edited and revised, all within the computer. The machine finally gives typed copies rapidly without flaw. The wordprocessor is now being superseded by a communicating wordprocessor. This machine can print information at remote location at a speed faster than the existing telexes. Using the microcomputer the secretary of an executive can organise his activities rather than be busy only in shorthand and typing. In auto industry, the microprocessors are used to control the speed; provide correct mixture of air and fuel; monitor engine temperature and give advance warning of the possible accidents and automatically slow down the speed and change the direction to avoid the accidents. It is estimated that by 1990, there will be a several hundred crores worth market, in the west, for the microprocessors in auto industry alone. Microprocessors help to relieve the suffering of the

old and physically handiapped. Computers control and operate security systems, play chess, answer telephone calls and provide information about airline schedules, shopping catalogues and banking facilities. Computers help to simulate proposed building complex, city or a town. City planner on TV screen can see rather than imagine how the proposed structure will actually look and introduce modifications, if necessary.

In planning economic growth, computers are used in agriculture to give real time information to the farmers about temperature, humidity, rain, forecast for say, the next 24 hours. They guide the farmer about the amount of water needed for irrigation according to the humidity, the percentage of manure in soil, conduct the economic analysis of crops and tells them at what time he should sow what. He simply has to press a button to get the information.

Computers are used in the design of improved computer machines and a host of equipment and tools. This is called Computer Aided Design (CAD). Similarly, Computer Aided Manufacture (CAM) is used in industry like electronics where a high level of accuracy is required. Computers guide the movements of tools and control the manufacturing process minutely and with great precision.

The microprocessor is built from silicon which is contained in common sand to the extent of about 26%. Silicon (unlike uranium) is not in short supply in the world. The technology to extract silicon from sand to a level of purity required, is extremely sophisticated. Silicon has the ability to

see the light from 0.4 to 1.1 microns wavelength which the naked eye cannot see. It can see in starlit night or even cloudy night. This property makes it very useful in defence. All the war machines have some exhaust or emit some rays which can be used for its detection in absolute darkness. The submarines used periscope in old times which could be seen by the enemy. It has now been replaced by the CCD camera and microprocessor which can scan the whole area without being detected. Super eye of silicon which has a transmitter can be sent as a "bomb" in the enemy territory (containing a camera, parachute and transmitter) that can send information from there. Earlier this work was done by spies and their fatality rate was high. This also gives instant information, as compared to days which spies used to take.

Research efforts are being put to convert the spoken words into typed information as an aid for the deaf people and reply of the deaf person into spoken words. Silicon has many other uses in medical science. In neurology, spinal cord disorders can be discovered much earlier. The muscular responses are measured and analysed by the computer and the information is displayed on the screen for the doctor. To paralysed people whose nervous system does not work but otherwise the body is healthy, the microprocessor provides the communication system and the person walks normally. Computer generated graphics help physicians to scan the brain for neurological and chemical activity. By computerised services, doctors are able to distinguish different tissues with sensitivity

60 times that of ordinay X-ray techniques. Electronic pacemakers give a new lease of life to heart patients.

There are various myths about computers. *First* is that it causes unemployment and *second* that they are prohibitively expensive. In early thirties, electric fans were resisted on the plea of displacement of a large number of people employed to move the fans. This did not prove to be true. In the use of computer there is a question of quality of work. If the social and political system is just, there can be equitable distribution of wealth arising from modern technology. It may create temporary dislocation of jobs, but in the long run it generates more employment. With the use of computers, the quality of work will improve and everyone will be better off. The prices of computers have come down drastically. Government should educate people to remove the myths of unemployment.

The computers have hardware and software. The hardware is the physical components including the silicon chip. Computer also needs programming which may be stored on the magnetic tapes or silicon chips. The programmes contain instructions and are called software. Computer's hardware consists of input units, output units, control, processor, etc., and the software comprises of utility programmes.

The birth of the modern computers took place in 1946 in the University of Pennsylvania with ENIAC. It was made from thermionic valves. It needed a room of 1,500 sq. ft., weighed 30 tons, had

18,000 valves and consumed 1,40,000 watts of power. Every 8 minutes a tube failed. It used vacuum tubes and could make 1,000 calculations per second. These were very big and cumbersome if judged from present standards, though at that time they were wonderful inventions. This was the first generation computer. The second generation was made from transistor which reduced the size considerably. These could make 1,00,000 calculations per second in early 60s. In the third generation, the transistors were replaced by integrated circuits. These were more reliable and less expensive. With fourth generation came large scale integration, where in a single chip one could have a large number of components. The size was further reduced, speed was further increased and reliability further improved. The Japanese are about to announce the fifth generation which has artificial intelligence.

8. MANAGING DIFFERENCES AND BUILDING COMMITMENT FOR PLAN

8. Managing Differences and Building Commitment for Plan

Discussion Leader
Dr. Dharni P. Sinha
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According to Dr. Dharni P. Sinha, Director Management Development and Research Division, Administrative Staff College of India, the two themes relating to management of differences and commitment for plan are inter-linked. Conflict management is an essential pre-requisite for building commitment in organization. If people are not committed the Plan will remain a blueprint and the system established can be circumvented. A large number of exercises are undertaken in terms of resources, investment and allocation for finalisation of five year plans, but adequate attention is not given to human aspect of implementation of the plan. The success of plan will depend on appropriate administrative structure, system and people. Most critical of the three variables is the people, management of human resources.

In formulation and implementation of economic development plans, the processes of differentiation of responsibilities and integration of work are unavoidable. Differentiation and integration generate conflict and co-operation. Conflict has to be managed and co-operation has to be encouraged—both are important for generating commitment.

Planning is a multi-level vertical process involving centre, states, districts and villages, but the work of implementation is a horizontal process which calls for coordination between various agencies and institutions in a given location. In this context, differences in viewpoints and conflicts are commonly experienced. Conflict can be either functional or dysfunctional. Functional conflict is desirable; it is a vehicle of change. Dysfunctional conflict reduces autonomy of organisations and individuals and creates problems. The important hallmark of dysfunctional conflict is win-lose syndrome, that is somebody has to win and someone has to lose. Such conflicts are unproductive and have to be dealt with. In the organisation, differences occur at (a) inter-personal level, i.e. between individuals, and (b) at inter-group level, i.e. between groups and departments. The dynamics of these two types of differences and conflicts are entirely different. Normally, with the change of involved person, personal conflicts disappear. Inter-departmental conflicts result from inter-dependencies, where collaboration is necessary to achieve results.

Collaboration and conflict are in fact two sides of the same coin. Culturally, Indian society approves

of collaboration but considers conflict undesirable. If the plan is to be implemented, administrators have to learn to resolve conflicts and create collaborative lateral relationships. If the various tasks of planning have to be accomplished, it is necessary to manage lateral relationships and horizontal coordination. If we do not perceive mutual interdependencies, the conflict will escalate to a higher order. To manage the conflict both at inter-personal as well as inter-departmental or group levels, attempt has to be made to find a solution which has win-win orientation. One must begin with the assumption that conflict is inevitable but agreement is possible. If conflicts are put under carpet they will pile up and erupt like a volcano. Transfer of person in a conflict situation is a short-range solution. Some administrators are very effective in managing crisis whereas others are great in stable environment. Better situation will be if the administrators have capabilities to deal with all types of conflicting situations. The transfer of people is a 'holding operation' but not building the organization. If the attitudes are changed and effort is made to objectively solve problems with a win-win syndrome, better results can be obtained.

According to Dr. Sinha, conflict cannot be resolved in an unequal power situation; power in behavioural sense not in terms of formal authority. For managing differences, the administrators must establish behavioural equality so that the parties involved are willing to talk on issues openly. This can be done through the process of dialogue with give-and-take attitude. In some situation when

bilateral dialogue is not feasible, help of a third party (a neutral catalyst) might be obtained. Dialogue emerging from questions How, What, When, Where and Why, facilitate explanation. The best way of managing differences is frequent use of these adult questions. Quite often, optimal tension is required for managing conflict, but creating optimal tensions is a double-edged weapon. The administrator must know how to tactfully descalate a situation.

Culturally, collaboration is valued and conflict is considered undesirable behaviour. Hence, tendency is to avoid conflict, taking recourse to fate, isolation, withdrawal or indifference syndrome. The reality is that needs of collaboration and demands of collaboration generate conflict. Confiict and collaboration have both to be accepted, and must be managed in a win-win style, i.e. both parties must have the perception that each one has won. The perception that 'I have won' is important.

Dr. Sinha also pointed out that once conflict has been managed successfully the administrators have to be ready to deal with the next round of differences, because as long as people will collaborate there will always be conflicts. As such, institutional mechanism for dealing with the conflicts has to be developed on normal and continuing basis. This will help in increasing productivity, raising people's goodwill and improving performance.

The first strategy for building commitment is to resolve or manage conflict and to develop such institutional mechanism which can help in handling

differences and conflicts as and when these appear. This will pave the way to building commitment, that is commitment to objectives, tasks and the plan as a whole. Commitment comes from ability to see that 'I' am a part of the organization, have something to contribute and have a role to perform. The task of implementing plan which is multi-disciplinary cannot be achieved without the co-operation of the people involved. This cannot be performed by the executive himself alone. People will perform the tasks if the executives accept the reality that they constitute their team and executives are dependent upon them for their successes and *vice versa.* Cohesive teams in working have to be created irrespective of the fact whether it is a business enterprise or government administration. Usually, an administrator has not more than eight to twelve persons to work on his objectives/tasks. To accomplish his tasks, an administrator has to build teams and accept the reality that the desired results cannot be obtained without the support of these people. Apart from building teams, he has to build inter-departmental, inter-team and inter-functional relationships. The members of the team must be together like members of an orchestra. If one person does not play the proper tune it affects the performance of the entire group.

Decision making is another important variable in building commitment. According to Herbert Simon, it is the most critical variable in efficient functioning of an organisation. There are five alternative ways of making decision. An executive may use his own judgment and decide. *Secondly*, the

executive may obtain opinion from others and then decide. *Thirdly*, he may consult individually. *Fourthly*, consult in group, and *lastly*, try to obtain group consensus. The last three styles generate acceptance and commitment. The quality of decision making is, however, not correlated with a decision style. If in the group nobody has expertise then better quality of decision may emerge through consultative and consensus process. While decisions have to be made by an administrator, in his own role, consultations with people and involvement of groups help in creating acceptability and commitment.

In the discussion that followed, a question was raised about the importance of reward in building commitment to the plan. Dr. Sinha pointed out that an administrator does not have authority to reward and punish as he desires. He has, however, freedom to provide encouragement, recognition and intrinsic reward where people find challenge and meaning in their job. He can create working environment which facilitates open discussion, generation of creative ideas and acceptance of challenging tasks.

It was emphasised that in the planned economy of India, bureaucracy has an important role in economic development and social change. These cannot be achieved unless professional commitment for performance to tasks and goals of planning is built and differences are managed on a continuing basis.

9. BETTERMENT OF PLANNINGCRAFT : BRAIN STORMING SESSION

9. Betterment of Planningcraft : Brain Storming Session

Prof. A.M. Khusro
Member, Planning Commission
(Chairman)

The session was presided over by Prof. A.M. Khusro, Member, Planning Commission. The purpose of the session was to gather group members' ideas which might help in developing a forward strategy of economic growth. In was in the nature of gathering harvest in terms of various points of views which might contribute to the emergence of new ideas and fresh approach for management of economic development. The main contributions by the participants are summarised below :

I. *Macro Plan Design and Models*

1. Indian planning model though strong had some substantial weaknesses. The systems of forecasting, surveys, demand projections and income assessment have been really good and sophisticated, but lack robustness in the sense that these do not stand disturbances that emerge in the economy as the plan implementation proceeds. Calculations should be made on varying assumptions so that the plan models are sensitised to various disturbances.

2. Planning Commission undertakes inter-sectoral balancing exercises for plan models. Changes, however, are made in certain variables for different considerations. But the impact of these changes in the input-output models is not worked out for inter-sectoral harmony. This should be done to avoid *ad hoc* changes in the growth models.

3. The macro economic models should show capital employment ratios and their effects on different investment patterns.

4. Rise in capital-output ratio is merely statistical because certain items which were not treated as capital expenditure earlier are now included in incremental capital.

5. In the existing system of preparing plans at constant prices, the effective plan size in real terms gets reduced as a result of rise in prices. The annual plan system within the five year plan period had assumed that the resources of the plan would go up correspondingly with the rate of increase in price level. This assumption has, however, not proved to be right. As a result, there remains a gap between rate of growth on resources side and that on the basis of expenditure. Budgeting on anticipated prices could be a solution. But an explicit mention of assumed rate of inflation has an adverse psychological effect on different segments of the economy. The plans can be made realistic if the system of constant prices is modified by making adequate provision for the gap.

6. The deterioration in the terms of trade was

taken into account for the first time while estimating the required resources for the Sixth Plan. The Seventh Plan must also take into account global inflation. The planning models should keep in view relative price structure within the country and in rest of the world.

7. The planning techniques call for some re-examination keeping in view the structure of society. On the one hand, quick change is desired from low infrastructure and capital-input base, and on the other, the cherished democratic values in planning are adopted. This led to a peculiar mixture of centralization and *ad hocism* in planning. As a result, despite 30 years of planning with emphasis on irrigation and crop harvest it has not been possible to insulate the uncertainties of weather. The strategy of planning should mitigate the effects of uncertainties.

8. The Perspective, Annual and Five Year Plans have very rarely been integrated from the points of view of non-renewable and non-tradeable resources. A more careful selection of the planning strategy is needed keeping in view availability and use of the non-renewable resources.

9. In plans, major thrust should be in taking up such selected areas of specialization where the country has comparative advantages and export orientation. For instance, Germany has specialised in mechanical industry and Japan has excelled in electronics.

10. The technology adopted over the last thirty

years has not generated enough surplus for ploughing back. As a result, the emphasis had been on more tax, subsidies and resources. In most cases, particularly in public sector, the capital intensive technology has been selected and a larger number of people have been employed. As a result, full benefits of technology have not been realised. It is necessary to examine the methods relating to choice of technology and determine the changes required in institutional structure and non-economic practices. In choice of technology, appropriateness should be regarded not as a static concept but must have a dynamic connotation.

11. Import of technology should be basically permitted on rational considerations after proper investigation. Imported technology should be indigenised.

12. The plan formulation mechanism should effectively cover private sector which contributes nearly 80 per cent. of national produce. The productive needs of the households as decentralised plan-base must be adequately provided.

13. Variety of problems call for different management responses. The private sector must have required flexibility rather than repetition of whatever government does. Meaningful linkages have to be established between private and public sectors so that their managerial efforts are directed towards a common goal.

14. The plan models should give projections of the impact that the plan expenditure will have on the income distribution among population below

poverty line. These should also incorporate the effects of employment generation on high income groups.

15. Rigorous discipline must be enforced for techno-economic orientation of the plan proposals and should be submitted well in time at least before one month of their appraisal and discussion in Planning Commission.

II. *Investment Pattern and Priorities*

16. A large portion of maintenance expenditure forms a part of investment budget and this results in a very high capital-output ratio. The plan discussions should not be confined only to issues relating to new investments, but should also cover how to make optimum use of the total capital stock, including provisions for depreciation, renovation, and repair.

17. The increase in the production of oilseeds has been very slow, resulting in a huge drain of foreign exchange. The plan should develop a strategy of growth so that green revolution spreads to oilseeds.

18. Agriculture is weather bound and more land cannot be added. If there are severe droughts in the country there will not be enough buffer stock of foodgrains. Food for people has to receive top priority.

19. The core sector needs to be redefined from socio-political point of view. It should include food, education, water supply and employment. So far,

power and industrial sectors have received major attention in the plans. The investment outlays in agriculture and social services sectors have to be increased and the funds provided for these should not be diverted to other sectors.

20. The present system of working in government requires some changes so that it becomes conducive to higher productivity. It should be ensured that the government takes decisions mainly on economic and rational considerations rather than merely on the ground of answerability to the people.

21. Industries which have export potentials should be identified and incentives be given so that these are able to compete in the international market and earn foreign exchange. The plan should review the position in this regard.

22. Substantial funds are being pumped into employment generation programmes in the form of subsidies. These are supposed to be productive subsidies so as to generate individual incomes. But there is no corresponding responsibility on the individual beneficiary to contribute to savings for investment. Some mechanism should be devised so that a part of additional income generated through subsidies goes to savings and is recycled for generating more income.

23. There is a need to reform taxation system so that those who add value to the society do not evade taxes.

III. *Planning Machinery and Process*

24. Country is facing the problems of development of backward areas, and regional disparities. In the First and Second Plans, local level planning was emphasised and it was proposed to have an appropriate organization and political set-up. This has somehow not materialised. Proper local planning requires a strong data base at unit level, and preparation of regional input-output tables.

25. The planning machinery at state, district and block levels must be professionalised. Unless this is done, decentralised planning at panchayat samiti level will not work effectively and data at local levels will not be forthcoming to help in preparing district and state plans. It is all the more necessary because action for plan implementation is normally taken at state level.

26. The existing planning process is partial in coverage. The private production sector is outside the purview of the plan process. Apart from this, the distinction between plan and non-plan is artificial as both contribute to economic development. The planning at state level in particular should take a total view of the development process.

27. Planning in India has to be based on aspirations of different people. It has to provide for effective land reforms, competitive job opportunities, democratic values of life and protection of economic interests of the poor. For this purpose, dependable data for every village on various aspects of development are to be provided.

28. The planning process is not attuned to meet the realistic needs of the country. Highly sophisticated products which the poor cannot afford to purchase are produced. Most of the employment generated does not provide income enough even to meet the basic needs of the people. Mahatma Gandhi's approach to economic development is relevant even now.

29. The present system of planning does not have a built-in elasticity to generate additional resources for financing the price escalations. As a result, the physical performance in public sector projects is much less than the plan targets. It may be explored if public sector enterprises could generate more internal resources and become self-financing. It is not desirable to continue providing additional resources through budgetary allocations for making up the financial shortfalls.

30. In the planning system, a built-in elasticity should be provided to generate additional resources for taking care of price escalations. If the element of rising prices is introduced in plan formulation, a number of problems like relative prices of investment and consumption goods would emerge. These should be taken into account.

31. Inflation at moderate rate does not bring about erosion in financial resources of the economy as a whole. Real problem is how to mobilise a larger share of the private savings for public sector investment. The public sector enterprises, on the other hand, should become substantially self-financing and reduce their demand on Government budgetary support.

32. A catalogue of all the major plan schemes/ programmes/projects indicating their objectives/ goals, outlays, implementing agency, period of execution, results achieved, may be prepared. Prof. D.R. Gadgil, the then Deputy Chairman, initiated this exercise on a very ambitious scale but much headway was not made. In the initial stages, it may be done in selective manner.

IV. *Manpower Management and Development Administration*

33. Population problem will continue at least upto the middle of the next century. So will be the mass unemployment and mass migration from rural to urban areas. People should be treated as a resource. The plans should aim at an optimum change rather than remain content with a marginal shift. This will not be easy unless there is a major science and technology breakthrough.

34. Planning is a continuous process. The returns from investments made in the Sixth Plan would result in the Seventh Plan and those of the Seventh Plan would result in Eighth Plan and so on. To get more out of investments it is necessary to use improved management practices in optimising resources at the planning stage and also in the subsequent stage after new investments have been made. Higher output can be obtained through demonstration of physical possibilities of getting increased output from the same input through improved technology rather than with price mechanism. For better management, there is a need to train administrators and technical personnel in

management systems and concerned aspects of technology. This will call for manpower planning of technical, skilled, semi-skilled and managerial personnel in all disciplines and in all areas—technical and non-technical.

35. The frustration among government employees is high. Performance based reward system should be instituted.

36. Although the standard of technical education is going up, the responsibilities assigned to technical people are not increasing correspondingly. This does not provide job satisfaction and results in under-utilisation of technical manpower, over-employment, and consequently lower wage payments.

37. The planning document does not provide for any punishment or reward system which should be put as a part of planning.

V. *Technological Policy and Resources*

38. In the age group 6 to 14 years, there are about a hundred million children and by the turn of the century they would number a hundred forty five million. For their education it will be necessary to open a school for 250 pupils every ten minutes if we follow the traditional technology of teacher, text book and class room. It is not possible to deal with such a large number of pupils without the use of modern communication technology of computer, space, T.V. etc. Higher allocation of funds will have to be made for this purpose.

39. There should be a fuller utilization of the available scientific and technological resources for planning. A technology development plan should be drawn. For this purpose, administrators and technical persons should be trained. Highly skilled scientific personnel employed in various teaching institutions should be utilised for surveys to identify local level problems and resources. The human and equipment resources in laboratories should be fully utilised for development of district and block level plans. The information and modern communication systems including computers should be more effectively used for monitoring plans and utilisation of scarce resources.

VI. *Project Formulation*

40. One of the weakest links in the plan is project formulation. Adequate funds are not provided for investigation and preparation of feasibility reports. This has, to some extent, resulted in cost over-runs and schedule slippages.

41. All plan proposals, as far as possible, should be broken into well defined projects and must be accompanied by their implementation plan in a tabular form with measurable performance indicators.

42. The plan proposals at the time of submission must be grouped under three heads—(i) vital, (ii) essential, and (iii) desirable, thus describing the hierarchy of implementation. The projects marked 'vital' and agreed to by Planning Commission might be improved but must not be altered, modified and reduced. These must be closely monitored.

43. Since the establishment of Project Appraisal Division in Planning Commission, nearly 700 major investment proposals excluding those involving revised cost estimates have been appraised and a very large number of approved projects have entered into operational stage. It is of common knowledge that these projects have not performed according to expectation. As such, it is worth examining in retrospect, how far our appraisal methods and procedures have been responsible for gap between precept and practice so that future projects are appraised more scientifically. In a number of cases, approval of projects has been given without consideration of financial and economic cut-off rates. There are many cases where approval of projects was given even though internal rate of return with premium for social considerations was less than 12 per cent.. For instance, Bharat Pumps and Compressors is reported to have IRR of 4 and 9 without and with premium of 25 per cent. on foreign exchange investment component respectively. Zetor Tractors (Pinjore) had zero rate of return without premium. Transformer Project at Jhansi had 6.43 IRR. It is difficult to say how widespread is this practice of approval of projects with low return by P.I.B. In a recent national workshop on "Appraisal and Selection of Investment Proposals", diverse practices of appraisal and selection came to light, and need for undertaking an in-depth study of some selected projects was felt for evolving improved methods of appraisal. Such a study requires whole-time attention of experts in different disciplines. It is difficult for subject division of Planning Commission to take up this study along with their normal

work. Since study will require examination of government and project files, it will be better if some institution patronised by government is asked to take up such a study under the supervision of some high powered committee. A study of this nature can also provide case study materials for use in training programmes for civil servants and public sector executives.

VII. *Implementation and Monitoring*

44. Plans prepared are excellent, but their implementation is not satisfactory. A good plan should have a built-in provision for effective implementation. There should be a proper system of communication at state, district, block and village levels for plan implementation. It should be easily understandable by the people likely to be involved in the implementation.

45. Various implementing agencies are involved in plan formulation through working groups. Quarterly performance reviews of progress are done at the top levels in the Ministries. Remedial actions are identified and communicated to the concerned agencies. These monitoring arrangements are required to be strengthened. Projects have cost and time over-runs. The installed capacities are not fully utilised. The managerial skills are required to be developed and improved. The best possible returns have not been obtained from investments.

46. A constant review of all plan projects should be undertaken. The projects which become uneconomical, out-of-date or obsolete should be dis-

continued. The resources so withdrawn should be invested in projects which are better according to economic considerations.

47. The timely availability of essential inputs like coal, cement, etc. should be ensured for each project through inter-ministerial coordination committees. There is need to get more out of investment by better management, by reduction in time and cost over-runs in projects and by fuller utilisation of created capacities.

48. Weaknesses in monitoring system operated through high level review meetings dealing with problems and remedial actions need to be removed for improving implementation of plan programmes. Monitoring systems should not be equated with data banks. These are different and must be developed differently. Specific type of monitoring system needs to be developed for projects.

49. The project implementation plan accompanying the plan proposals must indicate answers to questions like what, how, when, by whom, and at what cost.

50. Monitoring of results of plan efforts should cover both the aspects of 'efficiency' and 'effectiveness'.

51. The progress of implementation must be rigorously watched quarterly by comparing actual values against planned values, anticipating and identifying problems as soon as or before these

occurred, making decisions and taking action on time to solve them speedily.

52. Till a project enters revenue account the responsibility of implementation and monitoring should be jointly discharged by Planning Commission and Central Ministries.

53. In major projects, PERT based information system should be strengthened so that project authorities are obliged to update the network and give immediate intimation to the Ministry and Planning Commission about the total impact on the project of the slippage of particular activity in time and cost; and reasons thereof so that speedy action could be taken to solve the problems and arresting the delay in completion of project rather than face them as *fait accompli.*

VIII. *Evaluation*

54. When a project goes on revenve account, the project authorities are to send completion report to concerned Ministry and to the Comptroller and Auditor General of India. The reports are in the nature of expenditure statements under various heads against approved estimates with broad reasons of deviation. These are not evaluation of the total project experience summing up various learning lessons gained in the process of implementation of the project. Some work was initiated in designing completion report formats, but these have still to be properly tested for their wider usefulness. The retrospective in-depth study, suggested at 43 above,

can help better in evolving completion report design.

55. Evaluation of completed projects should be undertaken so as to benefit by past experience in formulation of future projects.

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APPENDIX I

STATISTICAL TABLES

STATISTICAL TABLES

TABLE—1

Plan Outlays by Heads of Development

(Rs. in crores)

Sl. No.	Heads of Development	First Plan 1951-56 (Actuals)	Second Plan 1956-61 (Actuals)	Third Plan 1961-66 (Actuals)	Annual Plans 1966-69 (Actuals)	Fourth Plan 1969-74 (Actuals)	Fifth Plan 1974-79 (Actuals)	Annual Plan 1979-80 (Actuals)	Sixth Plan 1980-85 (Estimated Outlay)‡	Seventh Plan 1985-90 (Outlay)
1	2	3	4	5	6	7	8	9	10	11
1.	Agriculture and allied sectors	290.0	549.0	1,088.9	1,107.1*	2,320.4*	4,864.9	1,996.5	15,003.9	22,792.5
2.	Irrigation and Flood Control	434.0	430.0	664.7	471.0	1,354.1	3,876.5	1,287.9	10,925.1	16,978.4
3.	Power	149.0	452.0	1,252.3	1,212.5	2,931.7	7,399.5	2,240.5	18,547.4	34,273.5
4.	Village and Small Industries	48.0	187.0	240.8	126.1	242.6	5,92.5	255.7	1,951.9	2,752.7
5.	Industry and Minerals	55.0	938.0	1,726.3	1,510.4	2,864.4	8.988.6	2,383.5	27,695.1	39,735.8
6.	Transport and Communications	518.0	1,261.0	2,111.7	1,222.4	3,080.4	6,870.3	2,044.9	17,649.8	29,443.5

7. Education	149.0	273.0	588.7	306.8	774.3	1,710.3++	263.0	2,916.3	6,382.6
8. Scientific Research			71.6	47.1	130.8		91.4+	1,176.0+	2,985.5+
9. Health	98.0	228.0	225.9	140.2	335.5	760.8	223.1	3,444.7	6,449.2
10. Family Planning			24.9	70.4	278.0	491.8	118.5		
11. Water Supply and Sanitation	33.0	85.0	105.7	102.7	458.9	1,091.6	387.6	6,613.9†	12,259.2†
12. Housing, Urban and Regional Development		85.0	127.6	73.3	270.2	1,150.0	368.8	2,833.1	4,259.5
13. Welfare of Backward Classes			99.1	73.6	164.6	724.0**	247.9**	†	†
14. Social Welfare	32.0	83 0	19.4	11.2	64.4	88.2	30.7	†	†
15. Labour Welfare and Craftsman Training			55.8	34.8	31.1	817.2$	236.5$	†	†
16. Other Programmes	160.0	186.0	173.1	115.8	179.8			888.6††	1,686.8
17. Special Schemes :									
(i) Special Welfare Programme	—	—	—	—	123.6	—	—	—	—

(*Contd.*)

TABLE—1 (*Contd.*)

1	2	3	4	5	6	7	8	9	10	11
	(ii) Crash Scheme for Educated Unemployed	—	—	—	—	54.0	—	—	—	—
	(ii) Advance Action for Fifth Plan	—	—	—	—	120.0	—	—	—	—
	TOTAL	1,960.0	4,672.0	8,576.5	6,625.4	15,778.8£	39,426.2	12,176.5	1,09,645.8	1,80,000.0

* Includes buffer stock of Rs. 140 crores for 1968-69 and Rs. 124 crores during the Fourth Plan.

** Includes provision for Hill and Tribal Areas; and also for special Central additive for Scheduled Castes component plans from 1980-81.

$ Includes provision for Nutrition.

£ Excludes expenditure on Nutrition (Rs. 3.7 crores).

+ Includes new and renewable sources of energy.

++ Includes Science and Technology.

† The figure in Col. 10 includes outlay for S. Nos. 13, 14 & 15 in Col. 10.

‡ The estimates of figures under Col. 10 are the summation of Actuals for the first 4 years of the Sixth Plan and the Revised Eestimate for the final year viz. 1984-85.

†† Includes Rs. 200 crores for special incentive schemes for better performance by States.

Sources : 1. Economic Surveys—Government of India

2. Basic Statistics Relating to the Indian Economy—Central Statistical Organisation

TABLE—2

Plan Outlays—Centre, States and Union Territories

(*Rs. in crores*)

Period	Centre	States and Union Territories	Total
1	2	3	4
First Plan (1951-56)	517.82	1,442.18	1,960.00
Second Plan (1956-61)	2,533.98	2,138.02	4,672.00
Third Plan (1961-66)	4,210.91	4,365.59	8,576.50
Annual Plans (1966-69)	3,400.07	3,225.33	6,625.40
Fourth Plan (1969-74)	7,826.10	7,952.70	15,778.80
Fifth Plan (1974-79)	20,507.92	18,918.28	39,426.20
Annual Plan (1979-80)	6,210.68	5,965.82	12,176.50
Sixth Plan (1980-85)	58,670.10	50,975.70	1,09,645.80
Seventh Plan (1985-90)	95,534.00	84,466.00	1,80,000.00

N.B. (1) Up to 1968-69, outlay denotes actual expenditure and rest are estimates.

(2) The figures for the Sixth Plan are estimates derived by summing up the Actuals for the first 4 years of the Plan period and the Revised Estimate for the final year viz. 1984-85.

(3) The Seventh Plan figures are outlays only.

Source : Planning Commission

TABLE—3

Total and Per Capita Plan Outlays—States/Union Territories

(Plan Outlays in Rs. crores and per capita outlays in Rs.)

States/Union Territories	First Plan (1951-56)		Second Plan (1956-61)		Third Plan (1961-66)		Annual Plans (1966-69)		Fourth Plan (1969-74)	
	Outlay	Per capita	Outlay	Per capita	Outlay	Per capita	Outlay	Per capita	Outlay	Per capita
1	2	3	4	5	6	7	8	9	10	11
I. States										
1. Andhra Pradesh	107	33	180.64	52	344.70	91	235.62	58	425.51	98
2. Assam	28	29	63.15	57	132.24	103	87.12	61	198.41	136
3. Bihar	102	25	176.87	40	331.74	67	217.37	40	479.21	85
4. Gujarat	99	58	146.83	76	237.68	108	207.00	84	545.02	204
5. Haryana	*	*	*	*	*	*	84.62	91	358.26	358
6. Himachal Pradesh	4.99	21	16.97	64	33.85	127	39.88	119	113.43	328
7. Jammu & Kashmir	13	39	26.82	77	61.24	166	59.28	152	162.22	351
8. Karnataka	94	46	138.72	62	250.69	100	192.15	70	374.14	128
9. Kerala	44	31	79.00	49	181.59	101	144.74	73	333.35	156
10. Madhya Pradesh	94	34	145.50	48	288.35	84	166.82	44	475.51	114
11. Maharashtra	125	37	214.03	57	433.60	103	388.83	83	1004.51	199
12. Manipur	1.08	17	6.22	86	12.82	100	7.20	72	31.15	290
13. Meghalaya	*	*	*	*	*	*	*	*	36.24	358

14. Nagaland	*	*	*	*	10.79	280	15.98	400	38.52	747
15. Orissa	85	56	89.36	54	224.06	120	122.75	60	249.34	114
16. Punjab	163	175	151.43	146	254.23	212	121.85	90	428.47	316
17. Rajasthan	66	39	99.86	53	210.89	97	166.60	53	308.81	120
18. Sikkim	*	*	*	*	*	*	*	*	*	*
19. Tamil Nadu	85	28	186.19	57	342.33	98	265.99	71	551.69	134
20. Tripura	1.62	21	9.41	94	15.51	156	11.44	82	34.66	223
21. Uttar Pradesh	166	25	228.32	32	560.25	72	451.40	53	1162.58	132
22. West Bengal	154	54	155.84	48	300.49	80	161.47	39	363.55	82
Total	1,432.69	38	2,115.16	51	4,226.93	92	3,118.91	61	7,674.58	142
II. Union Territories	9.49	28	22.86	57	138.66	295	106.42	103	278.12	417
Total States and Union Territories	1,442.18	38	2,138.02	51	4,365.59	94	3,225.33	68	7,952.70	145

(Contd.)

TABLE—3 (*Contd.*)

States/Union Territories	Fifth Plan (1974-79)		Annual Plan (1979-80)**		Sixth Plan (1980-85)		Seventh Plan (1985-90)	
	Outlay	Per Capita	Outlay	Per Capita	Outlay	Per Capita	Outlay	Per Capita
1	12	13	14	15	16	17	18	19
I. States								
1. Andhra Pradesh	1,333.58	307	421.50	97	3,100.00	713	5,200.00	1,196
2. Assam	473.84	324	155.00	106	1,115.00	762	2,100.00	1,435
3. Bihar	1,296.06	230	356.85	63	3,225.00	572	5,100.00	905
4. Gujarat	1,185.76	444	392.00	147	3,680.00	1378	6,000.00	2,247
5. Haryana	601.34	599	227.00	226	1,800.00	1793	2,900.00	2,889
6. Himachal Pradesh	238.95	691	73.00	211	560.00	1618	1,050.00	3,034
7. Jammu & Kashmir	362.64	785	118.00	255	900.00	1948	1,400.00	3,030
8. Karnataka	997.67	341	299.00	102	2,265.00	773	3,500.00	1,194
9. Kerala	568.96	267	170.00	80	1,550.00	726	2,100.00	983
10. Madhya Pradesh	1,379.71	331	455.00	109	3,800.00	912	10,500.00	2,083
11. Maharashtra	2,347.61	466	762.50	151	6,175.00	1225	7,000.00	1,680
12. Manipur	92.86	865	31.00	290	240.00	2243	430.00	4,019
13. Meghalaya	89.53	885	33.00	327	235.00	2327	440.00	4,357

14. Nagaland	83.63	1621	26.05	501	210.00	4038	400.00	7,691
15. Orissa	585.02	267	191.00	87	1,500.00	684	2,700.00	1.231
16. Punjab	1,013.49	748	260.00	192	1,957.00	1444	3,285.00	2,424
17. Rajasthan	709.24	275	275.00	107	2,025.00	786	3,000.00	1,164
18. Sikkim	39.64	1906	17.88	951	122.00	5809	230.00	10,951
19. Tamil Nadu	1,122.32	272	307.00	75	3,150.00	764	5,750.00	1,395
20. Tripura	89.68	448	28.00	179	245.00	1570	440.00	2,820
21. Uttar Pradesh	2,445.86	277	690.00	78	5,850.00	662	10,447.00	1,182
22. West Bengal	1,246.83	281	450.00	102	3,500.00	790	4,125.00	931
Total	18,284.22	338	5,738.78	106	47,204.00**	872	78,097.00	1,443
II. Union Territories	634.06	950	227.04	340	1,646.33	2468	3,768.29	5,649
Total States and Union Territories	18,918.28	345	5,965.82	109	48,850.33	891	81,865.29	1,493

* Was not a State during the period

** Originally Approved Plan Outlay

N.B. (1) Up to Fourth Plan, outlay denotes actual expenditure.

(2) Per capita outlay worked out on the basis of population estimate of 1953 in respect of First Plan; on 1958 for Second Plan; 1963 for Third Plan; 1967 for 3 Annual Plans; and 1971 in respect of Fourth Plan and subsequent plan periods.

Source : Planning Commission

TABLE—

Plan Financing

Period		DOMESTIC				
		Balance from current revenues	Additional Taxation including measures to increase the surplus of Public Enterprises	Internal resources of Public Enterprises	Small Savings	State Provident Funds
1		2	3	4	5	6
First Plan (1951-56)	Planned	570	*	170	225	45
	Actual	382	255	115	243	92
Second Plan (1956-61)	Planned	350	850	150	500	250††
	Actual	11	1,052	167	422	175
Third Plan (1961-66)	Planned	550	1,710	550	600	265
	Actual	(—)419	2,892	435	682	336
Annual Plans (1966-69)	Actual	346	908	398	419	303
Fourth Plan (1969-74)	Planned	1,673	3,198	2,029	665	660
	Latest Estimates	(—) 236	4,280	1,135	1,064	874
Fifth Plan (1974-79)	Planned	4,901	14,693	849	2,022	1,987
	Latest Estimates	6,636	10,300	2,583	2 132	2,013
Annual Plan (1979-80)	Planned	2,217	2,115	1,696	650	543
Sixth Plan (1980-85)	Planned	14,478	21,302	9,395	6,463	3,702
	Latest Estimates	1,893	32,970	5,810	9,912	3,956
1980-81	Planned	2,511	1,479	2,016	667	1,100
	Actual	2,662	926	1,231	1,121	618
1981-82	Planned	2,640	2,778	1,735	1,250	693
	Actual	2,561	4,154	836	1,361	605
1982-83	Planned	1,648	6,896	1,484	1,430	764
	Actual	923	6,822	1,235	1,721	1,005
1983-84	Planned	75	10,011	2,173	1,700	811
	Actual	(—)932	9,723	1,063	2,409	781
1984-85	Planned	(—)1,161	12,247	2,004	2,400	917
	Revised Estimates	(—)3,321	11,345	1,445	3,300	947
Seventh Plan (1985-90)	Planned	(—)5,249	44,702	35,485	17,916	7,327

*Included in Rs. 570 under Col 2.

**Actual expenditure amounted to Rs. 15779 crores.

†Later revised to Rs. 2378 crores

4

by Sources

(*Rs. in crores*)

RESOURCES					
Market borrowings	Others	Deficit financing	Total	Budgetary receipts corresponding to external assistance & IMF Loans	Aggregate Resources
7	8	9	10	11	12
115	133	290	1,548	521	2,069†
204	147	333	1,771	189	1,960
700	×	1,200	4,000	800	4.800
756	86	954	3,623	1,049	4,672
800	275	550	5,300	2,200	7,500
823	272	1,133	6,154	2,423	8,577
725	443	676	4,218	2,410	6,628
2,326	1,887	850	13,288	2,614	15,902
3,145	1,751	2,060	14,073	2,087	16,160**
6,507	1,156	1,354	33,469	5,834	39,303
7,443	836	3,560	35,503	5,209	40,712
2,591	348	1,355	11,515	1,086	12,601
22,222	5,009	5,000	87,571	9,929	97,500
24,702	7,365	15,684	1,02,292	8,529	1,10,821
3,505	150	1,722	13,150	1,792	14,942
3,598	(—)303	3,451	13,304	1,719	15,023
4,063	1,390	1,539	16,088	1,379	17,467
4,146	839	2,519	17,021	1,352	18,373
4,627	1,071	1,371	19,291	1,669	20,960
5,178	839	2,350	20,073	1,652	21,725
5,684	1,561	1,586	23,601	1,940	25,541
5,697	2,779	2,134	23,654	1,660	25,314
6,059	3,672	2,003	28,141	2,089	30,230
6,083	3,211	5,230	28,240	2,146	30,386
35,201	12,618	14,000	1,62,000	18,000	1,80,000

††Denotes total of amounts under Cols. 6 & 8

×Included under Col 6

Source : **Planning Commission**

TABLE—5

Gross Domestic Saving and Gross Domestic Capital Formation (at Current Prices)

(*Rs. in crores*)

Year	Gross Domestic Saving					Gross Domestic Capital Formation	
	Household Sector	Private Corporate Sector	Public Sector	Total	Percentage of total to Gross Domestic Product	Total	Percentage to Gross Domestic Product
1	2	3	4	5	6	7	8
1973-74	8,522	1,063	1,807	11,392	19.3	11,784	22.0
1974-75	8,610	1,440	2,676	12,726	18.3	13,379	19.2
1975-76	10,534	1,055	3,339	14,928	20.1	14,811	19.9
1976-77	12,698	1,147	4,185	18,030	22.5	16,721	20.8
1977-78	14,687	1,375	4,168	20,230	22.5	18,765	20.9
1978-79*	17,754	1,611	4,781	24,146	24.7	24,274	24.8
1979-80*	17,385	2,350	4,968	24,703	23.0	25,283	23.5
1980-81*	21,879	2,615	4,590	29,084	22.8	31,185	24.5
1981-82*	23,947	2,691	7,229	33,867	23.0	36,485	24.8
1982-83*	26,375	2,994	7,869	37,238	22.6	39,811	24.2
1983-84*	32,443	3,164	7,217	42,824	22.1	45,348	23.4
1984-85†	36,829	3,589	6,788	47,206	22.1	49,781	23.4
1985-90‡	2,16,165	28,779	57,422	3,02,366	...	3,22,366	...

* Provisional

† Quick Estimates

‡ Projected for Seventh Plan

Source : Economic Survey 1985-86—Government of India

TABLE—6

Development and Non-Development Outlays—Centre and States/ Union Territories

(Rs. in crores)

Period	Development	Non-Development	Total
1	2	3	4
1950-51	455	505	960
First Plan (1951-56)	3,265	2,932	6,197
1960-61	1,727	836	2,563
Third Plan (1961-66)	12,981	7,835	20,816
Annual Plans (1966-69)	11,029	8,389	19,418
Fourth Plan (1969-74)	28,006	21,274	49,280
Fifth Plan (1974-79)	66,804	39,588	1,06,392
Annual Plan (1979-80)	20,298	10,819	31,117
Sixth Plan 1980-81 (Actuals)	24,426	12,419	36,845
1981-82 (Actuals)	28,653	15,085	43,738
1982-83 (Actuals)	33,591	19,156	52,747
1983-84 (Actuals)	39,274	21,555	60,829
1984-85 (RE)	48,003	25,212	73,215
1985-86 (BE)	51,501	28,825	80,326

RE=Revised Estimates
BE=Budget Estimates

Source : (1) Review of First Five Year Plan—Planning Commission
(2) Economic Surveys—Government of India

TABLE—7

Incremental Gross Capital-Output Ratios (at 1970-71 prices)

Plan	Capital-Output Ratio
First Plan (1951-56)	3.2
Second Plan (1956-61)	4.1
Third Plan (1961-66)	5.4
Annual Plans (1966-69)	4.9
Fourth Plan (1969-74)	5.7
Fifth Plan (1974-79)	3.9
Annual Plan (1979-80)	Negative
Sixth Plan (1980-85)	4.1*
Seventh Plan (1985-90)	5.0**

*Provisional
**Projected at 1984-85 prices
Source : Planning Commission

TABLE—8

Annual Growth Rates of Agricultural and Industrial Production

(Percentages)

Period	Agricultural Production	Industrial Production
1	2	3
First Plan (1951-56)	4.1	7.3
Second Plan (1956-61)	4.0	6.6
Third Plan (1961-66)	(—)1.4	9.0
Annual Plans (1966-69)	6.2	2.0
Fourth Plan (1969-74)	2.9	4.7
Fifth Plan (1974-79)	4.2	5.9
Sixth Plan (1980-85)	5.91	5.5
Seventh Plan (1985-90)	4.31	8.0

N.B. : Seventh Plan figures are expected rates of growth

Source : Sixth and Seventh, Five Year Plans, Planning Commission

TABLE—9

Selected Plan Achievements—Physical

Sl. No.	Item	Unit	1950-51	1955-56	1960-61	1965-66	1968-69	1973-74
1	2	3	4	5	6	7	8	9
1.	Foodgrains	Million Tonnes	50.83	69.34	82.33	72.35	94.01	104.67
2.	Sugarcane (Cane)	Million Tonnes	57.05	60.54	110.00	123.99	124.68	140.81
	Sugarcane (in terms of gur)	Million Tonnes	5.71	6.08	11.14	12.77	12.83	14.43
3.	Cotton	Million Bales+	3.04	4.22	5.55	4.85	5.14	6.31
4.	Oilseeds (5 major oilseeds)	Million Tonnes	5.16	5.73	6.98	6.40	6.85	8.85
5.	Sugar	'000 Tonnes	1,061	1,728	2,699	3,388	2,792	3,354
6.	Tea	Million Kgs.	277.1	299.1	319.5	373.2	332.6	472.0
7.	Cotton Cloth (mill sector)	Million Metres	3,401	4,665	4,649	4,402	3,265	4,083

8. Coal (incl. Lignite)	Million Tonnes	32.843	39.948	55.519	70.297	75.403	81.1
9. (a) Crude Oil	Million Tonnes	N.A.	N.A.	0.454*	3.022*	5.853*	7.198*
(b) Refinery Throughput	Million Tonnes	N.A.	N.A.	6.091*	9.754*	N.A.	20.518*
10. Fertilizers							
(a) Nitrogenous	'000 Tonnes	9	80	98	233	543	1060
(b) Phosphatic	'000 Tonnes	9	12	52	111	210	323
11. Cement	Million Tonnes	2.73	4.67	7.97	10.82	12.15	14.60
12. Steel (Saleable)	Million Tonnes	1.04	1.30	2.39	4.51	4.70	4.47
13. Energy Generated (Gross)	Million KWH	6,575*	10,777*	20,123	36,825	51,642	72,796
14. Railway Originating Traffic (Goods)	Million Tonnes	93.0	117.0	156.2	203.0	205.0	184.9
15. Railway Route Kilometres	Kms.	53,596	55,902	56,247	58,399	60,014	60,234

(*Contd.*)

TABLE—9 (*Contd.*)

Selected Plan Achievements—Physical

1	2	3	4	5	6	7	8	9
16.	Roads							
	(a) Total (surfaced and unsurfaced motorable roads)	Kms.	3,99,942	4,38,750	5,24,478	7,70,151	5,94.296†	11,71,818
	(b) Surfaced roads	Kms.	1,57,019	1,83,026	2,08,796	3,43,260	3,25,885†	4,98,837
17.	Enrolment of students							
	(a) Classes I—V	Million Nos.	19.2	25.2	35.0	50.5	55.9†	63.2†
	(b) Classes VI—VIII	Million Nos.	3.1	4.3	6.7	10.5	12.7†	14.7†
18.	Technical Education							
	i. (a) Engineering and technology colleges	Nos.	33	47	81	640	N.A.	N.A.

(b) Students	Nos.	13,268	19,858	47,838	2,30,040	N.A.	N.A.
ii. (a) Engineering and technology schools	Nos.	109	158	283	1,818	N.A.	N.A.
(b) Students	Nos.	21,148	41,395	86,302	1,23,881	N.A.	N.A.
iii. (a) Medical Colleges	Nos.	28	41	60	87	93	100
(b) Students admitted	Nos.	2,675	3,660	5,874	10,520	11,699	13,205
iv. (a) Industrial Training Institutes/ Centres	Nos.	63	59	163	357	356	357
(b) Trainees	Nos.	10,290	11,684	36,850	96,211	98,704	1,33,739
v. (a) Central Training Institutes for Instructors	Nos.	1	1	3	7	7	7
(b) Trainees	Nos.	104	152	408	2,045	1,030	746
19. Hospital beds	'000 Nos.	113	125	185	240	256	281

(*Contd.*)

TABLE—9 (*Contd.*)

Selected Plan Achievements—Physical

1	2	3	4	5	6	7	8	9
20.	Post Offices							
	(a) Rural	Nos.	30,810	48,498	69,513	88,023	92,838	1,05,287
	(b) Urban	Nos.	5,284	6,544	7,326	8,913	9,639	11,453
21.	Telegraph Offices (including licensed offices)	Nos.	8,205	9,893	11,729	12,612	14,594	17,137
22.	Telephone connections	'000 Nos.	168	278	463	858	1,120	1,637

TABLE—9 (*Contd.*)

Selected Plan Achievements—Physical

Sl. No.	Item/Unit	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1989-90 (Targets)
1	2	10	11	12	13	14	15	16	17
1.	Foodgrains (Million Tonnes)	131.90	109.70	129.59	133.30	129.52	152.37	146.22	
2.	Sugarcane (cane) (Million Tonnes)	151.66	128.83	154.25	186.36	189.50	174.08	173.57	217.0
	Sugarcane (in terms of gur) (Million Tonnes)	15.73	13.09	15.40†	N.A.	N.A.	N.A.	N.A.	
3.	Cotton (Million Bales)	7.96	7.65	7.01	7.88	7.53	6.39	8.46	9.50
4.	Oilseeds (5 major oilseeds) (Million Tonnes)	9.35	8.04	8.34	10.99	8.8	11.3	N.A.	
5.	Sugar ('000 Tonnes)	5,844	3,859	5148	8,438	8,232	5,909	6,200	10,200
6.	Tea (Million Kgs.)	576	537	568	552	561	603	643	766

(*Contd.*)

TABLE—9 (*Contd.*)

Selected Plan Achievements—Physical

1	2	10	11	12	13	14	15	16	17
7.	Cotton cloth (mill sector) (Million Metres)	3317	3231	3434	2923	2,393	2704	2,619†	
8.	Coal (including Lignite) (Million Tonnes)	105.2	106.85	118.81	130.11	136.90	144.86	155.24	241.2
9.	(a) Crude Oil (Million Tonnes)	11.6	11.8	10.5	16.2	21.1	26.0	28.99	34.53
	(b) Refinery Throughput (Million Tonnes)	26.0	27.5	25.8	30.2	33.2	35.3†	35.6†	
10.	Fertilizers								
	(a) Nitrogenous ('000 Tonnes)	2180	2226	2164	3144	3424	3491	3917	6560
	(b) Phosphatic ('000 Tonnes)	770	757	842	949	980	1048	1264	2190

11. Cement (Million Tonnes)	19.3**	17.6**	18.6**	20.9**	23.3**	26.7**	30.1**	49.0
12. Steel (Saleable) (Million Tonnes)	7.65	6.90	6.82	7.75	8.05	6.14	8.77	12.64
13. Energy Generated (Gross) (Million KWH)	110,130	112,820	119.260	131,125	140,299	150,644†	169,183£	
14. Railways Originating Traffic (Goods) (Million Tonnes)	223.3	217.8	220.0	245.8	256.0	258.0	264.76†	
15. Railway Route Kilometres (Kms.)	60.777	60,933	61,240	61.230	61.385	61,460	61,850†	
16. Roads								
(a) Total (surfaced and unsurfaced motorable roads) (Kms)	1,445,286†	1,494,075†	1,502,597†	N.A.	N.A.	N.A.		

(Contd.)

TABLE—9 (*Contd.*)

Selected Plan Achievements—Physical

1	2	10	11	12	13	14	15	16	17
	(b) Surfaced roads (Kms.)	6,21,899†	6,48,086†	6,92,171†	N.A.	N.A.	N.A.		
17.	Enrolment of Students								
	(a) Classes I—V (Million Nos.)	72.2†	72.2†	72.7†	73.6†	77.0†	N.A.	85.37†	95.96
	(b) Classes VI—VIII (Million Nos.)	18.1†	18.7†	19.8†	21.1†	22.2†	N.A.	26.73†	41.67
18.	Technical Education								
	i. (a) Engineering and technology colleges (Nos.)	105‡†	107‡†	116‡†	125‡†	155‡†	N.A.	N.A.	
	(b) Students (Nos.)	2,12,524*†	2,25,499*†	1,03,195*†	91,500*†	1,17,408*†	N.A.	N.A.	

ii. (a) Engineering and technology schools (Nos.)	1,424†	1,384†	2,326†	2,536†	39.70†	N.A.	N.A.
(b) Students (Nos.)	2,04,764†	2,00,886†	3,62,304†	3,48,050†	3,83,665†	N.A.	N.A.
iii. (a) Medical colleges (Nos.)	106	106	106	106†	106	106	N.A.
(b) Students admitted (Nos.)	10,729	10,870	10,934	10,641†	11,054	10,818	N.A.
iv. (a) Industrial Training Institutes/ Centre (Nos)	356	356	356	356	623	N.A.	N.A.
(b) Trainees (Nos.)	1,47,026	1,44,810	1,43,413	1,48,231	1,76,979	N.A.	N.A.
v. (a) Central Training Institutes for Instructors (Nos.)	6	6	6	6	6	N.A.	N.A.
(b) Trainees (Nos.)	683†	800†	662†	765†	818†	N.A.	N.A.

(Contd.)

TABLE—9 (*Contd.*)

Selected Plan Achievements—Physical

1	2	10	11	12	13	14	15	16	17
19.	Hospital beds ('000 Nos.)	322	N.A.	N.A.	N.A.	584*	599*	N.A.	
20.	Post Offices								
	(a) Rural (Nos.)	1,17,260	1,22,839	1,24,689	1,26,193	1,27,123	N.A.	N.A.	
	(b) Urban (Nos.)	13,728	14,160	14,535	14,892	15,173	N.A.	N.A.	
21.	Telegraph Offices (including licensed offiees) (Nos.)	26,783	28,315	31,457	33,616	35,890	N.A.	N.A.	
22.	Telephone connections ('000 Nos.)	2,424	2,615	2,785	2.981	3,215	3455	N.A.	

+ Bale=170 Kgs.

* Figures relate to calendar years

** Excludes white and wuyan factory

Excludes statistics of post-matric institutions which is included in school standard

£ denotes Tentative

†denotes Provisional

N.A. Not Available

Note : Data for Crude Oil and Refinery Throughput prior to 1960 are not available from Ministry of Petroleum.

Source : (1) Economic Surveys—Government of India
(2) Central Statistical Organisation

TABLE

Principal

S. No.	Commodity	1955-56	1960-61	1965-66	1968-69	1973-74
1	2	3	4	5	6	7
I.	Food and Live animals chiefly for food (excluding cashew raw)	**34.4**	**285.7**	**507.2**	**336.6**	**473.1**
1.	Cereals and cereal preparations	N.A.	285.7	507.2	336.6	473.1
II.	Raw Materials and Intermediate Manufactures	**324.2**	**776.1**	**776.6**	**837.2**	**1,646.7**
1.	Cashewnuts (unprocessed)	N.A.	15.1	23.7	31.4	28.8
2.	Crude rubber (including synthetic and reclaimed)	N.A.	17.0	3.5	4.9	3.9
3.	Fibres	76.0	159.6	121.6	121.8	92.8
4.	Petroleum oil and lubricants	64.8	109.1	107.5	83.7	560.3
5.	Animal and Vegetable oils and fats	N.A.	7.2	24.2	19.3	64.9
6.	Fertilizers and chemical products	37.5	140.9	183.7	337.3	389.3
7.	Pulp and waste paper	N.A.	10.6	8.8	10.4	9.3

10

Imports

(*Value: Rs. in Crores*)

1978-79	1979-80	1980-81	1981-82	1982-83	1983-84**	1984-85**
8	9	10	11	12	13	14
245.3	279.9	**380.2**	**690.1**	N.A.	N.A.	N.A.
86.9	105.8	100.4	347.2	371.2	611.9	170.0
4,868.0	**6,913.1**	**9,759.6**	**10,138.2**	N.A.	N.A.	N.A.
9.2	11.6	8.7	18.4	1.4	14.2	27.2
29.7	53.6	31.5	76.0	63.9	80.6	70.7
267.0	156.1	164.2	254.4	N.A.	N.A.	N.A.
1,681.2	3,269.9	5,266.5	5,189.5	5,621.9	4,830.1	5,382.1
552.3	455.4	708.8	688.8	N.A.	N.A.	N.A.
913.9	1,113.0	1,490.1	1,512.9	N.A.	N.A.	N.A.
41.7	30.4	18.3	41.4	37.5	82.3	142.6

(*Contd.*)

TABLE

Principal

1	2	3	4	5	6	7
	8. Paper, paper board and manufactures thereof	N.A.	19.1	21.1	18.3	28.9
	9. Non-metallic mineral manufactures	N.A.	11.7	10.0	32.3	86.2
	10. Iron and steel	58.4	193.0	154.3	86.2	242.6
	11. Non-ferous metals	23.7	74.5	108.3	89.0	139.7
III.	Capital goods	153.4	560.5	803.7	530.0	650.5
	1. Manufactures of metals	N.A.	36.1	28.6	13.5	21.5
	2. Non-electrical machinery apparatus and appliances	107.7	320.3	525.7	370.0	416.5
	3. Electrical machinery apparatus and appliances		90.1	138.3	81.1	124.1
	4. Transport Equipment	45.7	114.0	111.1	65.4	88.4
IV.	Other (Unclassified)	94.7	172.7	130.9	157.8	150.6
	Total	606.7*	1795.0	2218.4	1861.6	2920.9

*Figure relate to Private Imports, and the total subsequently revised to Rs. 621.3 crores

**Denotes provisional

Source : Economic Surveys—Government of India

10 (*Contd.*)

Imparts (*Value : Rs. in Crores*)

8	9	10	11	12	13	14
104.7	158.8	186.5	245.4	159.5	172.6	175.1
560.3	442.3	555.2	511.6	844.2	1,257.6	1,158.2
462.5	868.6	852.4	1,203.5	1,172.2	962.9	777.3
245.5	353.4	477.4	397.1	344.6	369.1	345.1
1,306.1	**1,458.5**	**1,910.3**	**2,096.1**	**2,716.3**	**2,981.4**	**2,747.1**
46.1	75.7	89.5	115.5	143.7	147.8	129.6
769.6	806.9	1,089.1	1,349.2	1,604.8	1,973.8	1,872.3
193.6	237.3	259.7	326.4	328.2	403.6	461.1
296.8	338.6	472.0	305.0	639.6	456.2	284.1
391.2	**491.1**	**499.1**	**683.2**	**N.A.**	**N.A.**	**N.A.**
6,810.6	9,142.6	12,549.2	13,607.6	14,292.7	15,763.0	17,092.1

TABLE—11

Principal Exports

(*Value : Rs. in crores*)

Commodity	Unit of Qty.	1955-56		1960-61		1965-66		1968-69		1973-74	
		Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value
1	2	3	4	5	6	7	8	9	10	11	12
I. Agricultural and Allied Products [1]		N.A.	N.A.	...	341.3	...	402.4	...	388.4	...	736.3
1. Coffee	Million Kgs.	N.A.	N.A.	20	11.4	27	20.4	29	18.0	53	46.0
2. Tea	Million Kgs.	N.A.	110.6	199	194.7	197	180.9	201	156.5	190	144.9
3. Oil Cakes	'000 tonnes	N.A.	N.A.	433	22.5	829	54.6	832	49.5	1,225	170.6
4. Tobacco	Million Kgs.	N.A.	N.A.	47	24.8	59	33.3	54	33.8	81	70.9
5. Cashew kernels	'000 tonnes	N.A.	N.A.	44	29.8	51	43.1	64	60.9	52	74.4
6. Spices	'000 tonnes	N.A.	N.A.	17	13.4	26	17.5	19	9.7	32	29.5
7. Sugar	'000 tonnes	N.A.	N.A.	56	3.8	311	16.5	99	10.1	249	42.2

8. Fish & fish preparations	'000 tonnes	N.A.	N.A.	20	7.3	15	10.7	25	22.7	47	88.4
9. Fruits, vegetables and pulses	Value	—	—	—	—	—	—	—	—	—	—
II. Ores and Minerals		—	29.7	—	60.9	—	101.5	—	115.4	—	154.8
10 Iron Ore	Million Tonnes	N.A.	N.A.	3	26.8	12	66.3	16	88.4	24	132.8
III. Manufactured Goods[a]		...	N.A.	...	408.8	...	521.3	...	552.4	...	931.1
11. Textile fabrics and manufactures	Value	—	86.4	—	95.6	—	95.0	—	74.0	—	226.1
12. Coir yarn & Manufactures	'000 tonnes	N.A.	N.A.	71	13.7	70	16.6	59	13.8	46	15.3
13. Jute yarn & manufactures	Million tonnes	—	12.03	8	21.29	9	28.80	6.5	21.80	5.6	22.73

(*Contd.*)

TABLE—11 (*Contd.*)

Principal Exports

(*Value* : *Rs. in Crores*)

1	2	3	4	5	6	7	8	9	10	11	12
14. Leather & leather manufactures (excluding footwear)	Value	—	23.0*	—	54.2*	—	59.8*	—	78.0*	—	172.8*
15. Footwear	Million pairs	N.A.	N.A.	5	4.9	9	8.2	13	9.2	14	13.2
16. Pearls and precious stones	Value	—	N.A.	—	—	—	—	—	—	—	—
17. Handicrafts (including pearls & precious stones	Value	—	N.A.	—	—	—	—	—	—	—	—
18. Chemical & allied products	Value		N.A.	—	5.4	—	14.4	—	17.5	—	49.3
19. Engineering goods	Value	—	N.A.	—	13.4	—	26.2	—	67.4	—	201.3

20. Iron & steel (prime)	Value	—	N,A.	—	8.7	—	13.1	—	74.5	—	25.8
IV. Mineral, Fuels and Lubricants	Value	N.A.	N.A.	...	11.7	...	14.7	...	12.1	...	15.3
V. Others	Value	N.A.	N.A.	...	217.1	...	229.0	...	291.7	...	645.7
	Total		641.1		1039.8		1268.9		1360.0		2483.2

(*Contd.*)

TABLE—11 (*Contd.*)

Principal Exports

(*Value : Rs. in Crores*)

Commodity / Unit of Qty.	1978-79		1979-80		1980-81		1981-82		1982-83		1983-84P		1984-85	
	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value
1 2	13	14	15	16	17	18	19	20	21	22	23	24	25	26
I. Agricultural and Allied products.[1]	...	1,570.8	...	1,890.1	...	2,056.7	...	2,221.1	...	N.A.	...	N.A.	...	N.A.
1. Coffee (Million Kgs.)	66	144.0	62	163.3	87	214.2	74	146.3	77	187.1	74	183.3	68	198.1
2. Tea (Million Kgs)	172	340.5	204	367.8	229	425.5	214	395.2	195	369.8	198	501.4	216	707.9
3. Oil Cakes ('000 tonnes)	917	109.9	1034	127.5	886	125.1	824	117.9	1120	148.6	952	146.3	803	132.8
4. Tobacco (Million Kgs.)	84	116.3	85	113.5	91	140.7	133	235.5	132	247.9	83	169.7	94	172.2
5. Cashew kernels ('000 tonnes)	27	80.2	38	118.1	32	140.1	31	181.5	31	135.4	40	156.6	32	174.5
6. Spices ('000 tonnes)	98	147.9	110	149.4	84	111.4	78	98.8	80	94.6	86	109.3	91	174.1
7. Sugar ('000 tonnes)	720	131.0	568	128.9	72	36.0	201	63.2	318	67.4	240	139.9	105	21.7

8. Fish & fish preparations ('000 tonnes)	76	226.3	77	253.4	69	217.0	74	284.9	83	364.2	82	327,3	90	335.8
9. Fruits, vegetables and pulses (Value)	—	64.5	—	63.5	—	79.6	—	106.0	—	153.6	—	155.2	—	161.8
II. Ores and Minerals	...	**329.1**	...	**393.1**	...	**413.6**	...	**458.8**	...	N.A.	...	N.A.	...	N.A.
10. Iron Ore (Million tonnes)	21	232.9	25	285.2	22	303.3	24	351.8	22	380.5	21	385.3	24	447.2
III. Manufactured Goods[2]	...	**3360.8**	...	**3659.2**	...	**3746.8**	...	**4369.6**	...	N.A.	...	N.A.	...	N A.
11. Textile fabrics and manufactures (Value)	—	772.6	—	848.4	—	932.6	—	1047.1	—	N.A.	—	N.A.	—	N.A.
12. Coir yarn & manufactures ('090 tonnes)	—	26.4	—	36.6	—	17.3	—	27.9	—	26.3	—	23.5	—	22.4
13. Jute yarn & manufactures (Million tonnes)	2.9	16.69	7.2	33.61	6.6	330.0	4.3	258.0	3.3	205.3	3.0	164.5	2.9	341.1

(Contd.)

TABLE—11 (*Contd.*)

Principal Exports

(*Value : Rs. in Crores*)

1	2	13	14	15	16	17	18	19	20	21	22	23	24	25	26
14.	Leather & leather manufactures (excluding footwear) (Value)	—	327.7	—	485.6	—	337.1	—	369.4	—	360.1	—	349.9	—	425.2
15.	Footwear (Million pairs)	12.9	26.3	14	33.9	16	40.1	12	36.2	10	32.7	7	23.2	8	31.5
16.	Pearls and precious stones (Value)	—	713.7	—	519.0	—	601.9	—	761.1	—	950.0	—	1,214.1	—	1,093.1
17.	Handicrafts excluding pearls & precious stones (Value)	...	243.0	—	313.5	—	333.5	—	439.3	—	362.7	—	385.3	—	428.4
18.	Chemical & applied products (Value)	—	148.1	—	197.8	—	224.8	—	364.1	—	335.0	—	277.7	...	370.6
19.	Engineering goods (Value)	—	700.7	—	739.1	—	815.0	—	938.9	—	799.2	—	691.4**	—	738.4**

20. Iron & steel (prime) (Value)	--	118.0	—	32.7	—	11.7	—	6.8	—	50.2	—	46.4	—	62.1				
IV. Mineral, Fuel and Lubricants (Value)	...	19.8	...	21.2	...	27.8	...	224.9	...	177.1	...	362.0	...	255.0				
V. Others (Value)	...	445.6	...	454.8	...	465.8	...	531.5	...	N.A.	...	N.A.	...	N.A.				
Total		5,726.1		6 ,418.4		6710.7		7,805.9		8,803.9		9,872.1		11,554.8				

P Provisional

N.A.=Not Available

1. Also includes plantations and other agricultural based items.
2. Includes other manufactures.

**. Machinery including transport equipment and metal manufactures excluding iron and steel

*. The figures include exports of raw hides and skins

Source : Economic Surveys—Government of India

TABLE—12

Index Numbers of Wholesale Prices
(Base: 1970-71 = 100)

(*Figures: Average of Weeks*)

Year	All Commodities	Food Articles	Non-Food Articles	Fuel, Power, Light & Lubricants	Manufactured Products
1	2	3	4	5	6
1950-51	47.5	47.2	45.6	46.0	47.7
1955-56	40.8	36.1	35.9	49.3	44.9
1960-61	55.1	48.1	52.7	61.2	59.5
1965-66	72.7	71.1	68.6	77.2	74.4
1968-69	91.3	92.5	83.0	92.2	92.8
1973-74	139.7	137	147	131	140
1978-79	185.8	172	170	245	180
1979-80	217.6	187	195	283	216
1980-81	257.3	208	218	354	257
1981-82	281.3	235	241	428	271
1982-83	288.7	250	245	460	272
1983-84	316.0	283	282	495	296
1984-85	338.4	297	320	518	320

Source : (1) Revised Index Numbers of Wholesale Price in India (Base: 1970-71 = 100), Monthly Bulletin for September 1983, Ministry of Industry.

(2) Wholesale Price Statistics—India 1947-1978 by H.L. Chandhok (published by Economic & Scientific Research Foundation, Federation House, New Delhi-1)

(3) Economic Survey 1985-86—Government of India

TABLE—13

All India Consumer Price Index Numbers

(Base 1960=100)

(*Figures : Average of Months*)

Year	Industrial Workers		Urban Non-Manual Employees
	General Index	Food Index	
1	2	3	4
1960-61	104@	109@	103@
1965-66	137*	149*	130*
1968-69	N.A.	N.A.	161
1973-74	250	279	221
1978-79	331	346	306
1979-80	360	373	330
1980-81	401	419	369
1981-82	451	476	413
1982-83	486	508	446
1983-84	547	581	492
1984-85	582	607	532

Note : (1) In Industrial Workers category, figures for 1961 and 1965 are on original base (1935-36=100) shifted to 1960=100.

(2) Current series of All India Index on base 1960=100 was introduced w.e.f. August 1968. The earlier series on base 1949=100 was simultaneously discontinued. Index Numbers from August 1968 on base 1949=100 have been estimated by equating 100 of current series to 121.54 of earlier series in regard to General Index and 115.74 in regard to Food Index.

@ Refers to calendar year 1961

* Refers to calendar year 1965

Sources : (1) Economic Survey 1985-86—Government of India

(2) Basic Statistics Relating to the Indian Economy 1950-51—1979-80, Central Statistical Organisation

TABLE—14

Net National Product
(At 1970-71 Prices)

Year	Net National Product (Rs. crores)	Per Capita Net National Product (Rs.)	Index Number of Net National Product	Index Number of Per Capita Net National Product
1	2	3	4	5
1950-51	16,731	466.0	100.0	100.00
1955-56	19,953	507.7	119.3	108.9
1960-61	24,250	558.8	144.9	119.9
1965-66	27,103	558.8	162.0	119.9
1966-67	27,298	551.5	163.2	118.3
1967-68	29,715	587.3	177.6	126.0
1968-69	30,513	589.1	182.4	126.4
1973-74	36,033	621.3	215.4	133.3
1977-78	44,046	694.7	263.3	149.1
1978-79*	46,533	717.0	278.1	153.9
1979-80*	44,136	664.7	263.8	142.6
1980-81*	47,496	699.5	283.9	150.1
1981-82*	49,935	719.5	298.5	154.4
1982-83*	51,119	721.0	305.5	154.7
1983-84*	55,100	761.0	329.3	163.3
1984-85**	57,014	771.5	340.8	165.6

* Provisional
** Quick Estimates
Source : Economic Survey 1985-86—Government of India

TABLE—15

Annual Growth Rates of Net National Product
(At 1970-71 Prices)

Period/ Year	Net National Product	Per capita Net National Product
1	2	3
First Plan Period (1951-56)	3.6	1.7
Second Plan Period (1956-61)	4.0	1.9
Third Plan Period (1961-66)	2.2	—
Three Annual Plans Period (1966-67 to 1968-69)	4.0	1.8
Fourth Plan Period (1969-74)	3.4	1.1
Fifth Plan Period (1974-79)	5.2	2.9
Annual Plan (1979-80)	(—) 5.3	(—) 7.4
Sixth Plan Period	5.3	3.0
1980-81	7.6	5.2
1981-82	5.1	2.9
1982-83	2.4	0.2
1983-84	7.8	5.5
1984-85	3.5	1.4

Source : Economic Survey 1985-86—Government of India

TABLE—16

Profile of Public Enterprises

Item	Unit	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77
1	2	3	4	5	6	7	8	9	10
1. Public Enterprises	Nos.	73	87	93	101	114	120	125	149
2. Capital Employed	Rs. Crores	3,281	3,606	4,089	4,757	5,271	6,654	9,006	11,057
3. Turnover (Gross)	Rs. Crores	3,010	3,324	3,992	5,324	6,855	10,185	11,688	14,911
4. Gross profit before interest and tax	Rs. Crores	139	145	169	243	334	559	668	1,028
5. Net profit before tax (after setting off losses of loss making units)	Rs. Crores	15	20	22	81	149	312	306	421
6. Net profit after tax	Rs. Crores	(—) 4	(—) 3	(—) 19	18	65	183	129	184

7. Internal resources generated	Rs. Crores	194	204	215	260	387	580	526	719
8. Gross profit to capital employed	Percentage	4.2	4.0	4.06	5.10	6.33	8.40	7.42	9.29
9. Employment	Lakh Nos.	6.13	6.60	7.01	9.32	13.44	14.32	15.05	15.75

(Contd.)

TABLE—16 (*Contd.*)

Profile of Public Enterprises

	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85 (Provisional)
	11	12	13	14	15	16	17	18
1. Public Enterprises (Nos.)	155	159	169	168	188	193	201	205
2. Capital Employed (Rs. Crores)	12,065	13,969	16,182	18,207	21,935	26,526	29,851	36,390
3. Turnover (Gross) (Rs. Crores)	18,020	19,061	23,290	28,635	36,482	41,989	47,272	54,668
4. Gross profit before interest and tax (Rs. Crores)	915	1,071	1,229	1,418	2,654	3,465	3,565	4,637
5. Net profit before tax (after setting of losses of loss making units) (Rs. Crores)	160	185	225	19	1,024	1,542	1,480	2,119
6. Net profit after tax (Rs. Crores)	(—) 91	(—) 40	(—) 74	(—) 203	446	614	240	929

7. Internal resources generated (Rs. Crores)	708	906	1,030	1,225	2,261	2,753	3,695	4,880
8. Gross profit to capital employed (Percentage)	7.58	7.69	7.60	7.79	12.10	13.06	11.94	12.7
9. Employment (Lakh Nos.)	16.38	17.03	17.75	18.39	19.39	20.25	20.69	N.A.

Note : The information in the table relates to running public enterprises (excluding those under construction)

Source: (1) Public Enterprises Surveys—Ministry of Finance, Bureau of Public Enterprises

(2) Annual Reports on the Working of Industrial and Commercial Undertakings of the Central Government—Ministry of Finance, Bureau of Public Enterprises

(3) Economic Survey 1985-86—Government of India

TABLE—17

Time Over-runs in Selected Projects

Sl. No.	Name of Enterprise/ Project	Original Schedule of commissioning	Latest Revised Schedule/ Actual	Delay (years)
1	2	3	4	5
1.	Hindustan Fertilizer Corporation Ltd., Haldia Project	October, 1976	1981 anticipated	5
2.	Indian Petro Chemicals Corporation Ltd., Olefins Project	Naptha Crackar in 1973	1978	
3.	Bongaigaon Refineries and Petrochemicals Ltd.			
	3.1 Xylenes Unit	End 1975	May 1982	7
	3.2 DMT Unit	-do-	March 1983	8
	3.3 Polyester Fibre Unit	-do-	December 1984	9
	3.4 Offsite Phase II Unit	-do-	January 1982	9
4.	Cochin Shipyard Ltd.	1975	1981-82*	7
5.	Bharat Aluminium Co. Ltd.			
	5.1 Smelter Phase IV	August 1975	September 1978@	6
	5.2 Profile and Tubeshop 3150T Extrusion press	September 1975	December 1980 (Expected)	5
	5.3 Sheet Rolling Shop—Cold Rolling Mill	March 1976	April 1981	5

(Contd.)

TABLE—17 (*Contd.*)

1	2	3	4	5
6.	Bokaro Stage II	December 1977 except CRM	Blast Furnace No. 5 December 82	5
			CRM-Sept. 83 Other Units-Sept. 82	5
7.	Expansion of Bhilai Steel Plant from 2.5 m.t. to 4 m.t.	December 1976	1982 (all units) except 7th Blast Furnace) June 83—7th Blast Furnace	6 7
8.	Second sintering plant of the Bhilai Steel Plant	1975	Sintering Machine II 1980-81	6

* Expected date of completion of ship repair facilities

@ Completed but not commissioned

Note : 49 projects of public enterprises costing over Rs. 20 crores each were commissioned/expected to be commissioned during 1974-79. Out of these, projects of 5 enterprises were completed on schedule. The information in this table relates to projects of 8 such public enterprises where time over-run was 5 years and more.

Source : Committee on Public Undertakings 49th Report on Public Undertakings—Management and Control Systems—Lok Sabha Secretariat April, 1982.

TABLE—18

Cost Over-runs in Selected Projects

(Rs. in crores)

Sl. No.	Name of Enterprise/ Project	Original Estimates	Latest Revised Estimates	Percentage Increase
1	2	3	4	5
1.	Neyveli Lignite Corporation Ltd. Mine Expansion Project	36.00	137.83	280
2.	Hindustan Paper Corporation			
2.1	Kerala Newsprint Project	30.08	133.49	343
2.2	Nagaland Project	18.72	62.12	230
3.	Bongaigaon Refinery and Petrochemicals Ltd.			
3.1	Crude distillation unit and offsite phase	...	...	...
3.2	Captive power plant	80.91	310.75	280
3.3	Petrochemical units and 4 other small units	...	...	...
4.	Cochin Shipyard Ltd. Main Shipyard	45.42	139 00	205
5.	Hindustan Copper Ltd., Khetri Copper Complex	24.44	138.36	466

Note : During 1974-79, 49 projects of public enterprises costing over Rs. 20 crores each were commissioned/expected to be commissioned. Out of these, there was as yet no escalation in cost in respect of 2 projects. The information in this table relates to 6 such projects of 5 public enterprises where cost over-run was more than 200 per cent., each.

Source : Committee on Public Undertakings 49th Report on Public Undertakings—Management and Control Systems—Lok Sabha Secretariat April 1982.

APPENDIX II

SEMINAR PROGRAMME

PROGRAMME OF TRAINING SEMINAR

on

Management of Economic Development : New Horizons

11.4.1983 : MONDAY

0900-0930	Registration	Vigyan Bhawan Reception at VIP Entrance
0930-1030	Inauguration	committee Room 'B' Ground Floor
	Commencement Talk	Dr. Pranab Mukherjee Union Finance Minister
	Opening Remarks	Dr. P.R. Dubhashi Director IIPA
	Seminar Highlights	Prof. Ram Prakash Seminar Convener
	Chairman's Remarks	Dr. B. Venkatappiah Vice-President IIPA
1030-1100	Coffee/Tea	
1100-1215	THEORY AND TECHNIQUES OF MACRO PLAN DESIGN Prof. Sukhmoy Chakravaty Delhi School of Economics	
1215-1330	INTER-SECTORAL BALANCES AND POLICY QUESTIONS Prof. Y.K. Alagh Chairman Agricultural Prices Commission	
1330-1415	Lunch	

1415-1530 SYSTEMS VIEW OF MANAGEMENT OF ECONOMIC DEVELOPMENT
Dr. L.K. Wadhwa
Director
Institute for Systems Studies and Analysis
Ministry of Defence

1530-1600 Tea/Coffee

1600-1715 TECHNOLOGY POLICY
Prof. M.G.K. Menon
Member
Planning Commission

12.4.1983 : TUESDAY

1000-1115 INTEGRATED PLANNING—GRASSROOT AND UPWARD
Prof. Kamta Prasad
Indian Institute of Public Administration

1115-1145 Coffee/Tea

1145-1300 ASSESSMENT OF PLANNING PERFORMANCE : PANEL DISCUSSION

Discussion Leaders — Shri R.K. Roy,
Resident Editor
Economic Times

Shri S. Kumar Dev
President
Forum of Financial Writers

Chairman — Prof. A.M. Khusro
Member
Planning Commission

1300-1400 Lunch

1400-1515 TECHNIQUES FOR MEASURING INVESTMENT MERITS OF PROJECT
Prof. Ram Prakash
Indian Institute of Public Administration

1515-1545 Tea/Coffee

1545-1700 PROJECT SELECTION BY PUBLIC INVESTMENT BOARD
Shri Harbans Singh
Secretary (Expenditure) and Chairman, P.I.B.
Ministry of Finance

13.4.1983. : WEDNESDAY

0930-1030 PROJECT IMPLEMENTATION PLAN
Prof. Ram Prakash
Indian Institute of Public Administration

1030-1130 RESOURCE MOBILISATION AT CENTRE AND STATES
Prof. M.J.K. Thavaraj
Indian Institute of Public Administration

1130-1145 Coffee/Tea

1145-1300 EFFECTIVE CONTROL SYSTEMS EOR ECONOMIC DEVELOPMENT
Shri K.V. Ramanathan
Secretary
Planning Commission

Shri Tarlok Singh
Former Member
Planning Commission

1300-1400 Lunch

1400-1515 PROJECT SELECTION BY INTERNATIONAL FINANCIAL INSTITUTIONS
Mr. J.D. Roulet
Chief of Mission
World Bank
New Delhi

1515-1545 Tea/Coffee

1545-1700 MICROPROCESSOR AND ITS USE IN ECONOMIC DEVELOPMENT

Dr. S.C. Jain
Director
Solidstate Physics Laboratory
Ministry of Defence

14.4.1983 : THURSDAY

0930-1030 INTER-FACE OF PLANNERS WITH POLITICAL EXECUTIVES IN ECONOMIC PLANNING

Shri P.N. Haksar
Former Deputy Chairman
Planning Commission

1030-1130 MANAGING DIFFERENCES

Dr. Dhani P. Sinha
Director
Management Development and Research Division
Administrative Staff College of India
Hyderabad

1130-1200 Coffee/Tea

1200-1300 BUILDING COMMITMENT FOR PLAN

Dr. Dharni P. Sinha
Director
Management Development and Research Division
Administrative Staff College of India
Hyderabad

1300-1400 Lunch

1400-1515 BETTERMENT OF PLANNINGCRAFT : BRAIN STORMING SESSION

Chairman Prof. A.M. Khusro
Member
Planning Commission

1515-1600	VALEDICTION	
	Valedictory Address	Prof. A.M. Khusro Member Planning Commission
	Introductory Remarks	Dr. P.R. Dubhashi Director IIPA
	An Overview of Seminar	Prof. Ram Prakash Seminar Convener
	Concluding Remarks	Prof. M.V. Mathur Vice President IIPA
1600	Tea/Coffee	

APPENDIX III

SEMINAR PARTICIPANTS

PARTICIPANTS OF TRAINING SEMINAR

on

Management of Economic Development : New Horizons

1.	Agnani, T.R.	Secretary to Govt. of Gujarat, Finance Department, Gandhinagar
2.	Ahluwalia, S.S.	Director (Training), Department of Personnel & Administrative Reforms, Ministry of Home Affairs, New Delhi
3.	Ahmad, K.M.	Secretary to Government of Andhra Pradesh, Deptt. of Planning, Hyderabad
4.	Anjaneyulu, B.	Joint Adviser (PP), Planning Commission, New Delhi
5.	Bhattacharya, A.K.	Special Adviser (Food), Directorate of Economics & Statistics, Ministry of Agriculture, New Delhi
6.	Bhowmik, D.N.	Adviser (Fertilizers), Ministry of Chemicals & Fertilizers, New Delhi
7.	Bhussry, V.K.	Joint Secretary & Financial Adviser, Ministry of Chemicals & Fertilizers, New Delhi
8.	Chadha, Kamal Mohan	Director (Admn.), Ministry of Irrigation, New Delhi
9.	Cowlagi, V.R.S.	Secretary to the Government of Gujarat, Gandhinagar
10.	Das Gupta, S.K.	Joint Adviser (Minerals), Planning Commission, New Delhi

11. Dayanand, A.	Commissioner & Secretary to Government of Tamil Nadu, Planning and Development Department, Madras
12. Deshpande, N.R.	Retd. Professor of Political Science, Nagpur
13. Doshi, L.N.	Secretary to Govt. of Maharashtra, Planning Deptt. Bombay
14. Dubhashi, P.R.	Director, Indian Institute of Public Administration, New Delhi
15. Ganguli, N.C.	Statistician, Indian Institute of Public Administration, New Delhi
16. Gaur, M.K.	Assistant Editor, Indian Institute of Public Administration, New Delhi
17. Govind Ballabh	Professor (Traffic Training), Railway Staff College, Vadodara
18. Gupta, S.P.	Adviser (PP), Planning Commission, New Delhi
19. Hanumantha Rao, V.V.S.R.	Joint Adviser (Coal), Power & Energy Division, Planning Commission, New Delhi
20. Ittyerah, Anil C.	Lecturer, Indian Institute of Public Administration, New Delhi
21. Jain, R.K.	Director (Railway Planning), Railway Board, Ministry of Railways, New Delhi
22. Jethra, B.D.	Joint Adviser (Engg.), Industry and Minerals Division, Planning Commission, New Delhi
23. Jhingran, I.G.	Joint Secretary, Deptt. of Mines, Ministry of Steel & Mines, New Delhi
24. Joneja, G.C.L.	Treasurer, Indian Institute of Public Administration, New Delhi
25. Kala, Alka	Under Secretary, Training Division, Deptt. of Personnel & Administrative Reforms, Ministry of Home Affairs, New Delhi

26. Kamta Prasad	Professor, Indian Institute of Public Administration, New Delhi
27. Kapoor, Mahesh	Joint Adviser (Transport), Planning Commission, New Delhi
28. Kapur, G.P.	Joint Adviser, Planning Commission, New Delhi
29. Kaul, P.N.	Officer on Special Duty, Ministry of Communications, New Delhi
30. Khosla, Aarti	Director (Training), Deptt. of Personnel & Administrative Reforms, Ministry of Home Affairs, New Delhi
31. Kunte, J.G.	Member (Social Services) and Member Secretary, Bihar State Planning Board, Patna
32. Kulkarni, M.R.	Joint Adviser, Planning Commission, New Delhi
33. Lal, Ram N.	Joint Adviser (FR), Planning Commission, New Delhi
34. Lavakare, P.C.	Project Coordinator, Deptt. of Science & Technology, New Delhi
35. Madhav Lal	Addl. Secretary to J & K. Govt., Planning and Development Deptt., Jammu/Srinagar
36. Misra, C.P.	Director (Navy), Ministry of Defence, New Delhi
37. Murthi, K.V.S.	Adviser (Village and Small Industries), Planning Commission, New Delhi
38. Naidu, W.G.	Manager (Trg. & Dev.), Bharat Heavy Electricals Ltd., Bhopal
39. Nair, C.P.S.	Adviser (Science & Technology), Department of Mines, New Delhi
40. Narayanan, M.K.	Lecturer, Indian Institute of public Administration, New Delhi
41. Padhye. M.G.	Secretary, Ministry of Irrigation, New Delhi

42. Prakash Narain	Adviser (Transport), Planning Commission, New Delhi
43. Puri K.S.	General Secretary, People's Action for Development (India), Ministry of Rural Development, New Delhi
44. Puttaswamaiah, K.	Senior Director, Planning Department Govt. of Karnataka, Bangalore
45. Qureshy, M.N.	Director, Deptt. of Science and Technology, New Delhi
46. Raj Nandy	Lecturer, Indian Institute of Public Administration, New Delhi
47. Rajan, V.N.	Professor, Indian Institute of public Administration, New Delhi
48. Ram Prakash	Professor, Indian Institute of public Administration, New Delhi
49. Raman, T.E.	Controller (Plan Operations), Office of Director General P & T., New Delhi
50. Ranade J.Y.	F.A. & C.A.O., North Eastern Railway, Gorakhpur
51. Seth, S.C.	Deputy Secretary, Deptt. of Science & Technology, New Delhi
52. Sharma, R.C.	Deputy Adviser, Planning Commission, New Delhi
53. Singh, Ajit	Director, Punjab State Planning Board, Chandigarh
54. Singh, Harcharan	Joint Adviser, Planning Commission, New Delhi
55. Singh, Kulwant	Financial Commissioner and Secretary to Government of Haryana, Chandigarh
56. Sundararajan, S.	Joint Secretary (State Plans), Planning Commission, New Delhi
57. Tewari, J.N.	Chief Executive Officer, NSSO, and Joint Secretary, Deptt. of Statistics. Ministry of Planning, New Delhi

58. Thavaraj, M.J.K.	Professor, Indian Institute of Public Administration, New Delhi
59. Thyagarajan, M.	Consultant, Indian Institute of Public Administration, New Delhi
60. Upadhyay, J.N.	Lecturer, Indian Institute of Public Administration, New Delhi
61. Venkataramani, C.	Additional Development Commissioner and Secretary to Government of Orissa, Planning & Coordination Deptt., Bhubaneswar
62. Vinay Shankar	Joint Secretary Deptt. of Science & Technology, New Delhi
63. Zakhuma, Rual	Development Commissioner and Finance Secretary, Govt. of Mizoram, Aizawl